

**THE MOTORSPORTS EDUCATION FOUNDATION--a non-profit society**

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**Kenneth L. Berg-archivist**

Who's who in the west 1998, Honorary member 4<sup>th</sup> Armored Division, Associate member Veterans of the Battle of the Bulge,  
Biographer of Smoky Joe Wood, Louie Meyer and other notables, Burgess Shale Foundation 1998, East Kootenay Childhood Foundation

Mission Viejo, California

11 February 2008

**SYNOPSIS**

**A REUNION OF AMERICAN RACERS**

**SYLVESTER ROPER**

**WALTER MARR**

**LEO GOOSSEN**

**HARRY MILLER**

**FRED OFFENHAUSER**

**LOU MEYER**

**DALE DRAKE**

**EDDIE AND BUD MEYER**

**CLINT BRAWNER**

**STUART HILBORN**

**GEORGE BIGNOTTI**

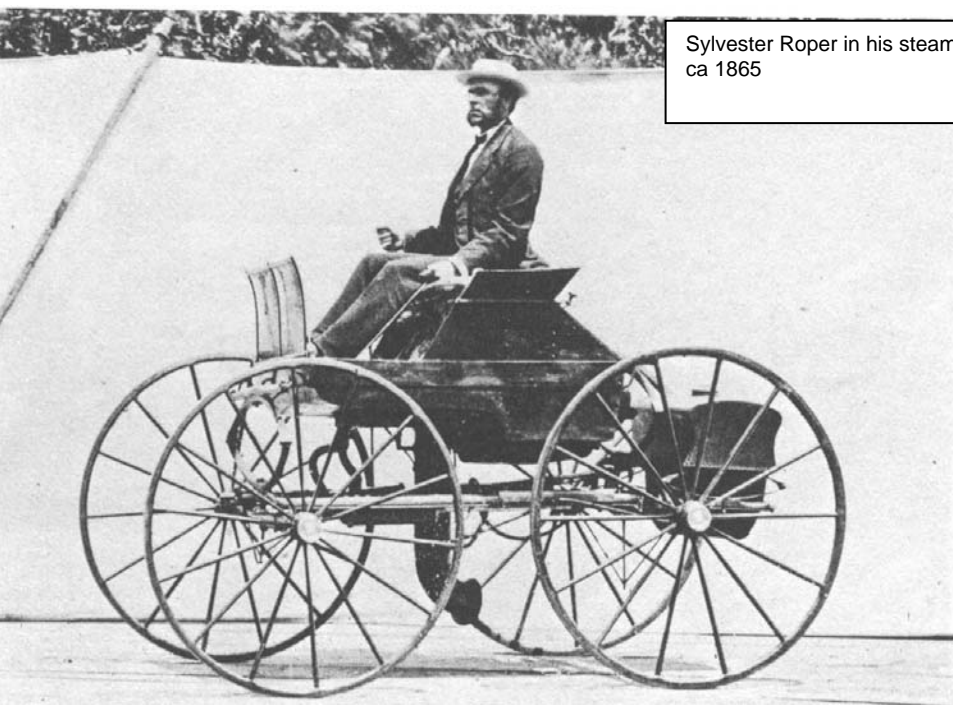
**DICK JONES**

**JOHN DRAKE**

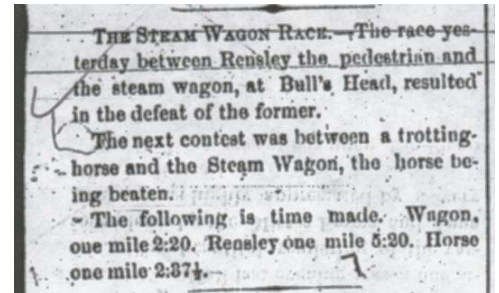
**SONNY MEYER**



Ken Berg



Sylvester Roper in his steam-racer  
ca 1865



## SYNOPSIS ...

These Monographs have been created for such diverse auto-racing notables as Leo Goossen who joined his mentor, Buick's Walter Marr in 1906. Leo worked later for Harry Miller whose Peugeot 'connection' led to the 140 horsepower 8-cylinder overhead camshaft engines of 1921. In its most famous configuration this became the 4-cylinder non-aspirated engine dominating American racing until 1965 when Dale and John Drake took over and powered the little engine as the Drake-Offy turbocharged engine to produce a stock 900 horsepower--and much more for some of the more daring racers, such as Indy 500 winning-car builders Dan Gurney, and Team McLaren ... all this, with Leo Goossen as Drake's chief engineer/designer/draftsman.

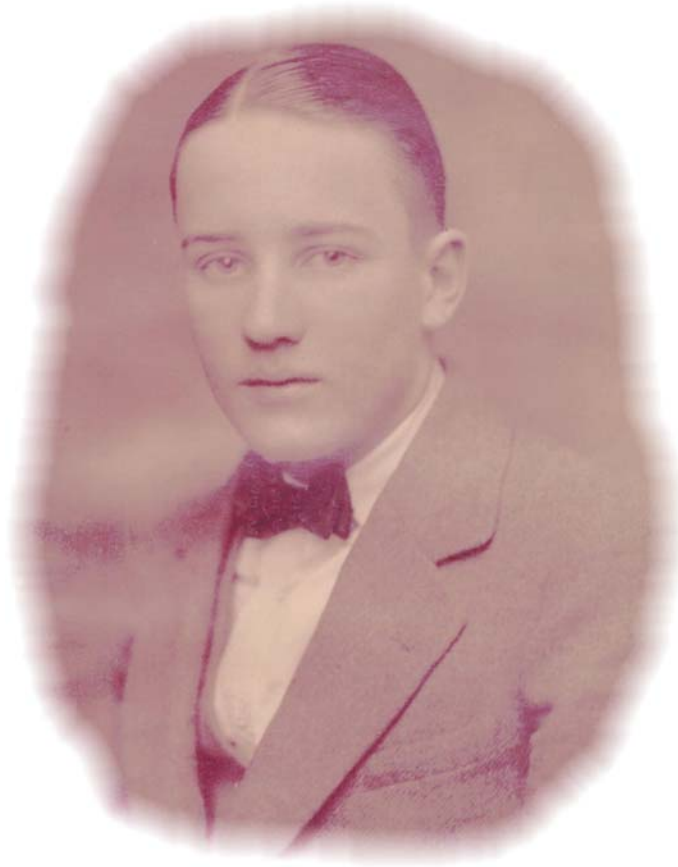
Before them was Sylvester Roper in his steam racer in 1865. Americans have always been racers ... relentlessly seeking the Racer's Edge ... to design and engineer competitive machinery.

Many friends have loaned me their personal photo albums to support these monographs. Special thanks are due them and especially the Meyer family, the Drake family, and Stewart Van Dyne and Bill Close who have put me in touch with Leo's career ... from the turn-of-the-century beginnings of racing to the powerful Drake-Offys of the 1970s.

Leo's career of more than 65 years as an engine designer, and developer of competitive improvements to suit the ideas and demands of: Harry Miller, Fred Offenhauser, Lou Meyer, Dale Drake, John Drake. And others he worked with, such as: Stewart Van Dyne, Walter Sobraske, Dale Koch, Harry Meyer ...and hundreds of other racers from Barney Oldfield to Pat Patrick. all having their own ideas of how to create the racer's edge from the compromises of rpm, torque, weight, fuel consumption, longevity, cost, fasteners, gaskets, cements, magnetos, pistons, rods, valves, valve springs, clutches, cooling, filtering, castings, forgings, metallurgy, fuels, tires, drag ... all these to convert air and fuel into heat to spin the engines at ever-increasing speeds ... and pushing the limits of the stresses that engines could withstand.



**LEO GOOSSEN**  
**America's Premier Designer of**  
**Superb Racing Machinery for More Than**  
**Sixty-five Years**



**LEO GOOSSEN**

**as a young man of much promise**  
**with the Buick Motor Co.**  
 ca 1910

His genius gave life to racing ideas for almost 70 years. He started in 1906 as the protégé of Buick chief engineer, Walter Marr. Sixty-eight years later, shortly before his death in 1974, Leo drew up a new design for a combustion chamber for a 900 horsepower turbocharged 'Offy' for Drake Engineering. In between, he was the key link between Harry Miller, Fred Offenhauser, Lou Meyer, Dale Drake, John Drake, Walter Sobraske and the top engines and cars for American racers ... for the Indianapolis 500, dirt-track sprint cars, midgets ... wherever they raced fine machinery.



Leo Goossen was the draftsman who made racing concepts into reality.

Lou Meyer won at Indy in a Goossen-designed supercharged Miller 91 in 1928. Buying Frank Lockhart's supercharged 91; he went on a tear and was very competitive with it after Indy in 1928 and through the 1929 season, almost winning Indy for the second time in a row, but for an unseen crack in the intercooler manifold. Using Jadson products brought Dale Drake on board as riding-mechanic and crew chief to Meyer. From 1930 until 1937 supercharging was banned, and it wasn't until 1938 that Meyer got back into a supercharger-engined car. It was the Goossen-designed Bowes 8-cylinder car that was a front-runner in the hands of Rex Mays when Louie retired from driving after Indy in 1939.

**LOUIS (Louie) MEYER**

**Mechanic, Race Driver, Builder of Championship Racing Cars and Engines, Sportsman, Athlete, Gentleman  
... a man of many parts**

**LOU MEYER**

1928 was a big year ... his first Indy win



**Introduction** ... the following vignettes illustrate the scope of family, friends and associates representing a great slice of racing history. This is their reunion ...

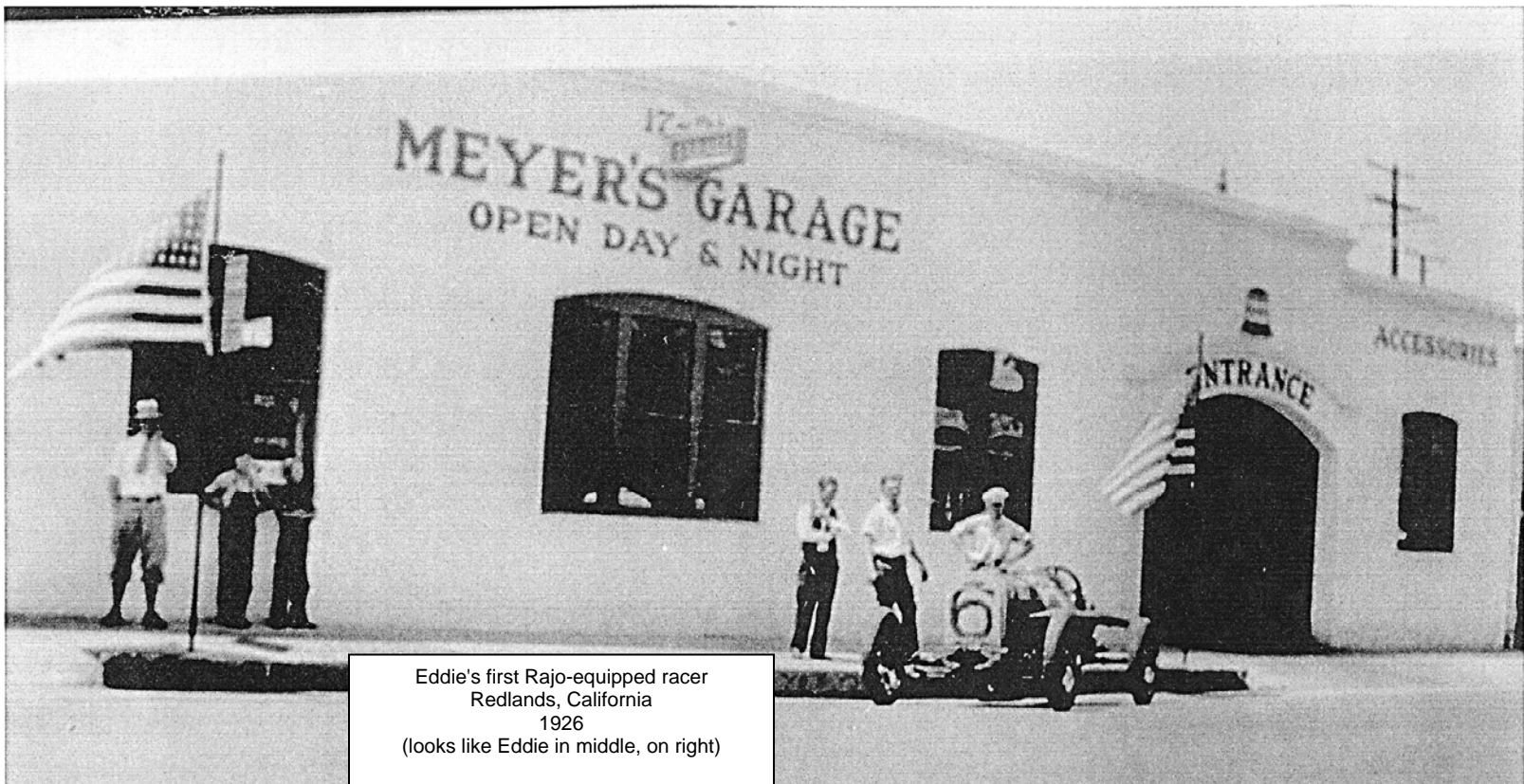
**LOUIS (Loo-iss) MEYER**, born in New York in 1904, grew up in small-town Redlands, California where brother **EDDIE MEYER** was a garage-owner and builder of race cars. Louis worked with Eddie and learned the auto racing trade. They raced with each other and against each other in the 1930s.



Ms. Pfau (the piano teacher), Eddie and Louie ... 1921

*From R. Ham Lybb, Hale Pence, Elgin Smith, Eddie Meyers Inc Rajo, Redlands, Cal.*

1926



Eddie's first Rajo-equipped racer  
Redlands, California  
1926  
(looks like Eddie in middle, on right)





FRANK ELLIOTT

Winner of record-breaking race at  
Los Angeles (Culver City) Nov. 29,  
1925

Vivian Elliott, Frank, and Louie  
Setting out for Indianapolis  
1926

Louie met **FRANK ELLIOTT** through Eddie. Frank was a friend of **IRA VAIL**, who, with **TOMMY MILTON**, had encouraged **HARRY MILLER** to build the first of his 8-cylinder, 183 cid, DOHC 4-valve racing engines. Frank had driven **BARNEY OLDFIELD'S** Delage with another early Miller engine (intended for the Golden Submarine). They put the engine into the Delage which Frank Elliott drove to a first win for Miller engines. Oldfield had driven **HENRY FORD'S** racer after a career as a bicycle racer. He hired Barney, a professional dare-devil and bicycle racer, to drive the Ford race-cars.

Henry Ford would come into Louie's career several times, in the future. Frank took Louie into big-time racing at various tracks such as: the bricks at the **INDIANAPOLIS MOTOR SPEEDWAY (Indy)**, the dirt-tracked county fair-grounds (bull rings) of Detroit and Syracuse, and the board-tracks of Altoona, Charlotte, Salem and Culver City. Frank was a veteran driver and had worked with Harry Miller, self-taught builder of the most successful cars and engines of the time. He had driven for Ira Vail, a veteran driver, and later a race promoter. He also drove for Cliff Durant son of Billy Durant who put together the **GENERAL MOTORS CORPORATION**. Cliff owned a team of cars and drove, himself. Frank took Louie under his wing, showed him the ropes and how to be a winner in the big leagues of auto racing.



By a Staff Photographer of The Philadelphia Inquirer.

**SPEED KING SNAPPED IN CAMDEN AFTER COAST-TO-COAST MOTOR TRIP**

Frank Elliott, wizard of the motor boards, is seen with his wife and Louis Meyer, his mechanic, after they arrived in Camden from Los Angeles by auto. The party left Los Angeles one week ago last Sunday, stopping off two days in Kansas City. Elliott will drive a Miller Special when he lines up with other speed kings at the start of the 300-mile race over the Atlantic City Speedway course at Amstel tomorrow.

At this time (1926) Louie met **FRANK LOCKHART** a hot-shot race driver also from Los Angeles. Lockhart was experimenting with improvements to the supercharger and other parts of the Miller car in which he had won at Indy in 1926.

Volume XLIX **MOTOR AGE** Number 22

CHICAGO, JUNE 3, 1926

# Small Engines *and* Rain Cut Indianapolis Speed

1926

*But 91½ Cubic Inch Race Cars Show Up Well  
in First Trial*

By SAM SHELTON

**B**y winning the Fourteenth International Sweepstakes race at Indianapolis Memorial Day, May 31, Frank Lockhart demonstrated first, that a newcomer on the big brick oval has equal opportunity with the experienced drivers, and then that the new 9½ cubic inch race cars have remarkable capacity for speed and performance.

Without being pushed except for a brisk spurt now and then Lockhart was a good two laps in the lead of his nearest competitor and had established an average speed of 94.63 m.p.h. when the race was called at 400 miles on account of the approaching rainstorm that broke with a downpour a few minutes later. A shower at noon that had caused the race to be suspended for an hour and 10 minutes had wet the track pretty thoroughly before the drivers were called in and had served to slow down the rate of speed that might have been expected for the early part of the race.

Owing to the interruption of the race at noon and the calling of the event at 400 miles instead of allowing it to go the full 500, the race lacked some of the intense thrills that have characterized these great speed classics for years, but still the competition was keen enough and the rivalry intense enough to keep a record crowd in the stands and vantage points of the infield until the last.

Attendance was estimated by T. E. Myers, Speedway manager, at about 140,000 which was said to have been the largest in the history of the track.

The speed set in the early part of the race compared favorably with that set at Indianapolis last year when the 122 cubic inch cars established new records. At the



Frank Lockhart, winner of fourteenth Indianapolis race, being greeted by his wife at finish

end of 25 miles this year the average of the leader was 103.06 m.p.h. as compared with 104.17 for the first 25 miles last year. At the end of 100 miles this year the leader's average was 100.39 m.p.h. as compared with 103.89 last year. At 200 miles, after the showers had interfered, the speed had come down to 97.76 but at the same point last year it was 103.79.

After the 200 mile mark the average was gradually reduced, reaching the low point of 94.56 m.p.h. at 375 miles, then gaining slightly as the drivers settled down to the grim business of finishing to the best advantage.

It was a Miller Special that Frank Lockhart of Los Angeles, heretofore unknown in the big Speedway races, but of considerable experience on the dirt tracks, drove to victory, and it was also a Miller Special that Harry Hartz wheeled into second place.

Third place winner was Cliff Woodbury of Chicago, also a dirt track driver, whose mount, a Boyle Special, was of Miller construction but with engine equipped with Boyle valves.

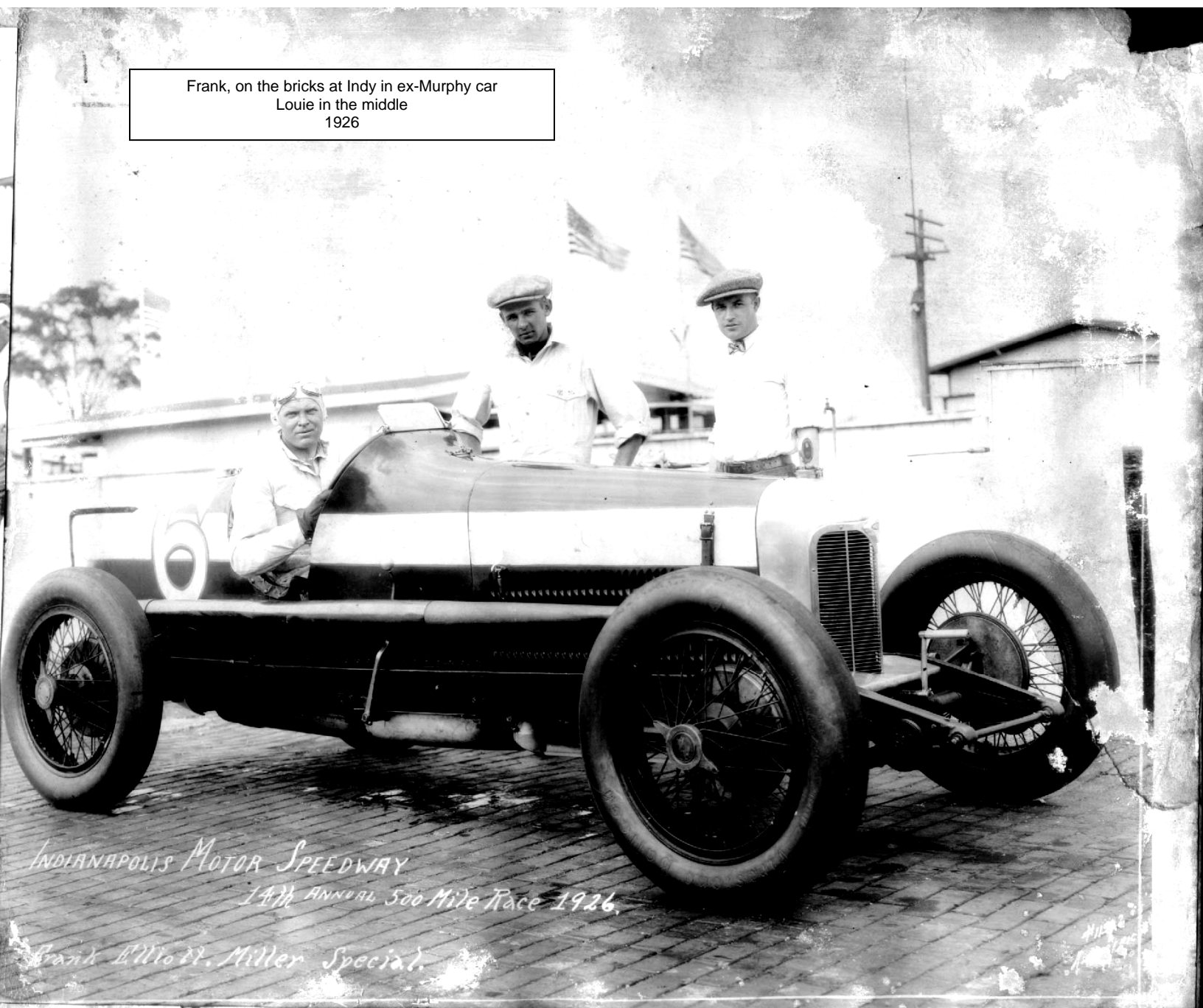
Fourth place also went to a Miller Special, driven by Fred Commer.

The Duesenberg name, distinguished for successive and spectacular victories in 1924 and 1925, was kept in the front rank by Pete DePaolo who finished fifth in a Duesenberg Special.

Only two Duesenbergs started, that driven by DePaolo and a two cycle job driven by Ben Jones which went out of the race in its 53rd lap when it developed axle trouble and skidded into the wall. Three other Duesenbergs that had been entered were not ready to qualify.

And he also met **ALDEN "SAM" SAMPSON** who, while driving a Chrysler stock-car in minor races, was, unbeknownst to Louie, the scion of a wealthy family having truck manufacturing and auto dealerships in their portfolio.

Frank, on the bricks at Indy in ex-Murphy car  
Louie in the middle  
1926



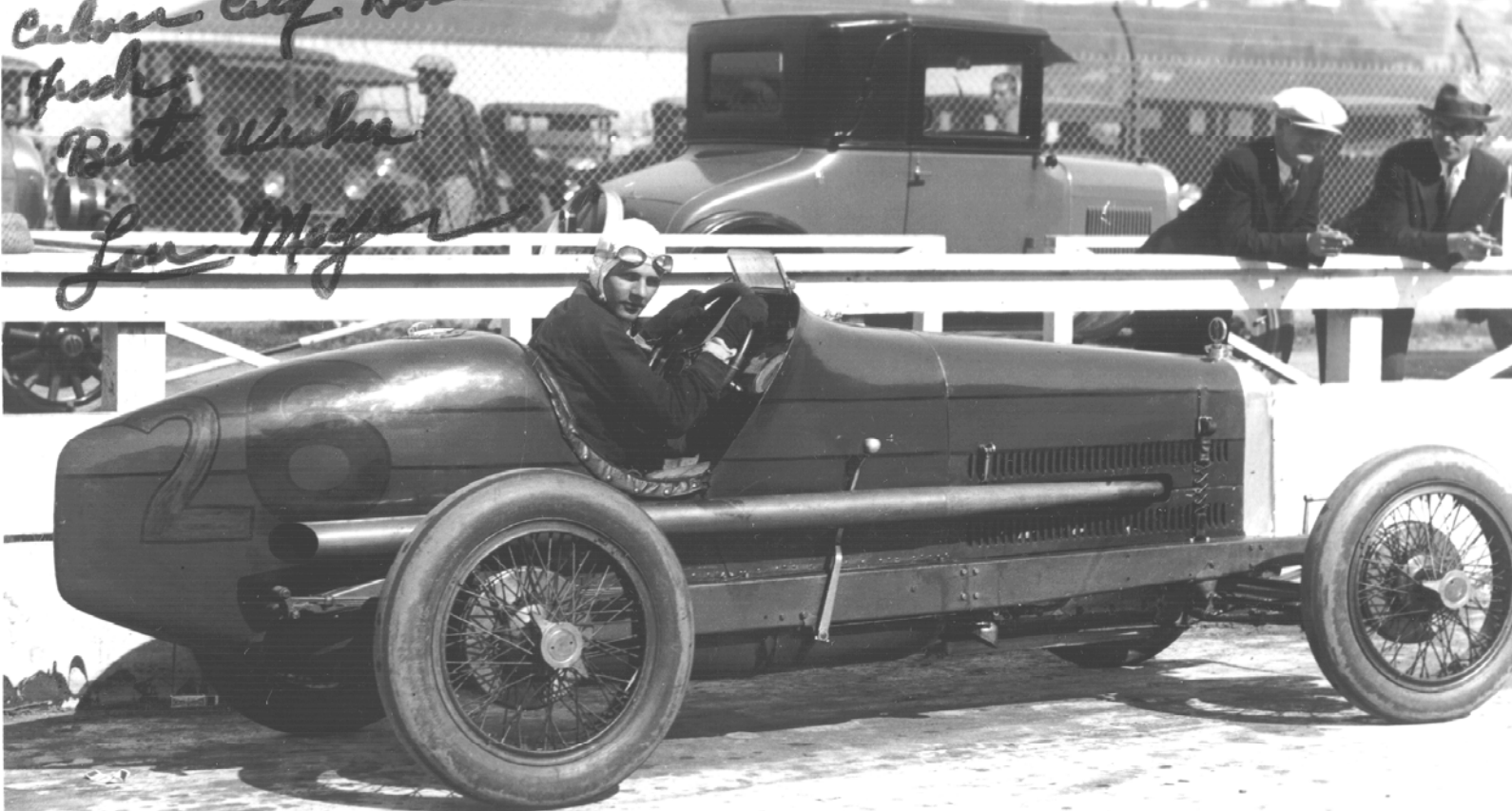
INDIANAPOLIS MOTOR SPEEDWAY

14th ANNUAL 500 MILE RACE 1926

Frank Elliott Miller Special

Elliott put Louie into his car on several occasions to give him experience to further his career in racing.

To  
Doug  
The Miller at  
Culver City Board  
Track  
Best Wishes  
Lou Meyer



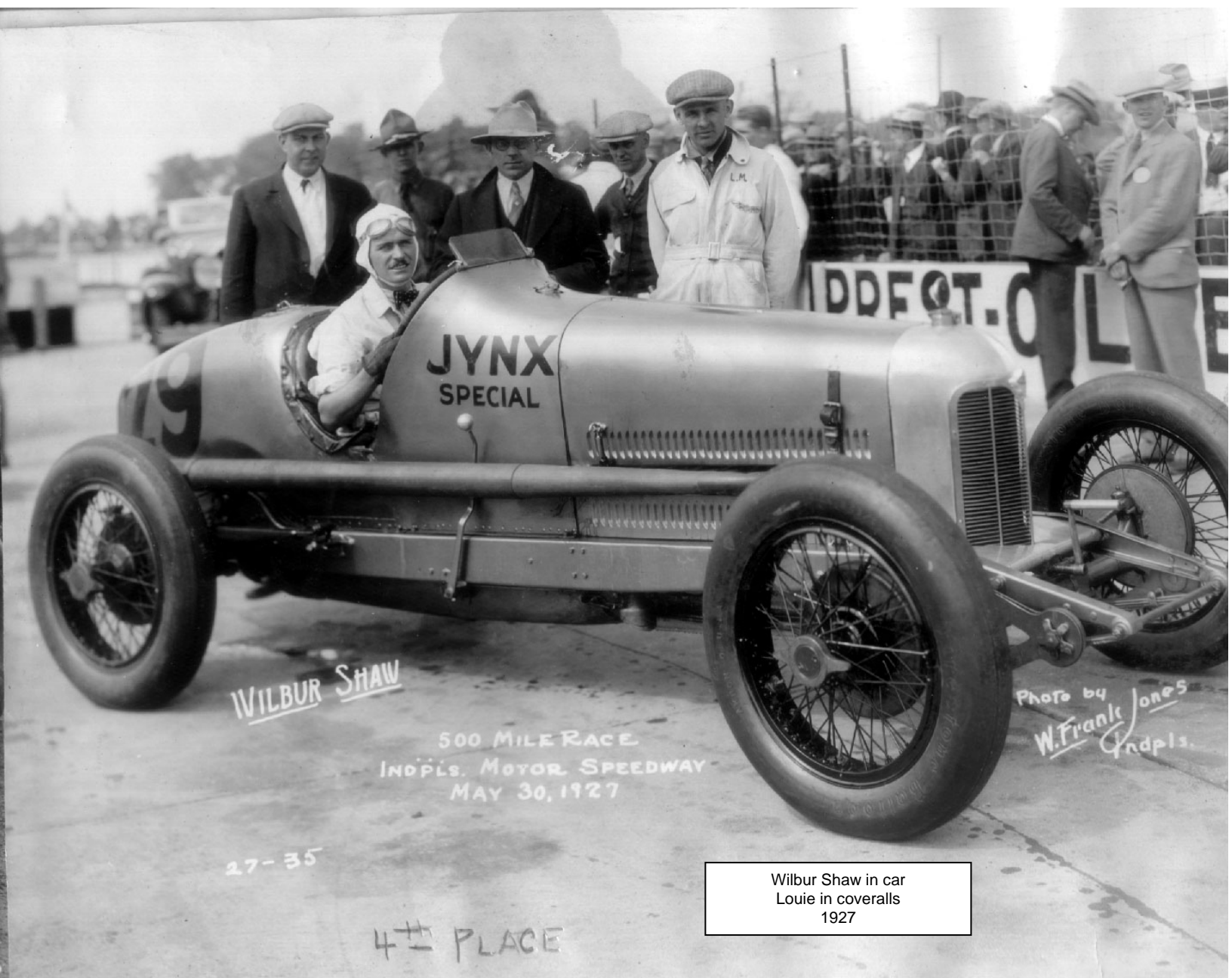
The young Lou Meyer at Culver City  
1926



Frank sold their race car (the ex-**JIMMY MURPHY** car, rebuilt by Frank, with Dick Doyle) to owner Holliday and race-manager Clemons in 1927. Frank made sure that Louie went with the car as its mechanic. The team signed him on as a driver ... just in case.



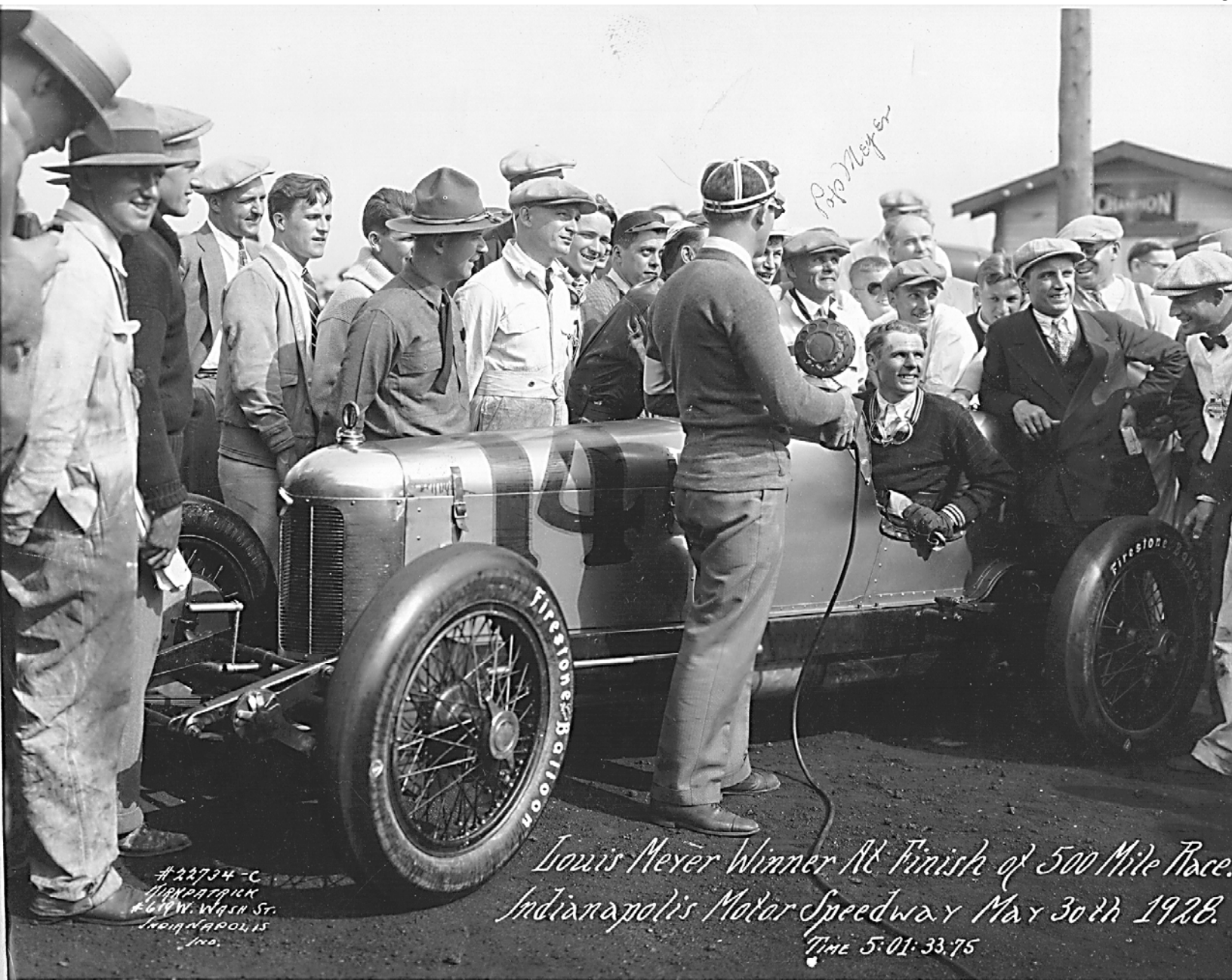
Clemons had worked with another young racer, (two years older than Louie) **WILBUR SHAW** who had been racing in minor events in Model Ts and a car he built with Roscoe Dunning. Louie was relief-driver with Shaw and did well. The rookies finished 4<sup>th</sup> in the 1927 Indy race.



Wilbur Shaw in car  
Louie in coveralls  
1927

He went to other races on the circuit to find work and did some relief driving for the team of **AUGUST (AUGIE) DUESENBERG**, who with brother Fred Duesenberg built luxury automobiles. Augie was impressed with Louie and invited him to drive a Duesenberg racer at Indy in 1928, where Louie met **PAUL MILLER** a young supercharger specialist. They put the car together, tuned it up to go racing and Louie ran a few practice laps; then Augie sold the car before the race. But Sam came up with money to buy Red Shafer's car and Paul got permission from Augie to work in Louie's pit.





In 1926 Louie went to Indianapolis as a mechanic with Frank Elliott. Two years later he won Indy and went on to win two more before retiring in 1939.



And with Frank Elliott as team-manager and Sam as owner, they won Indy!



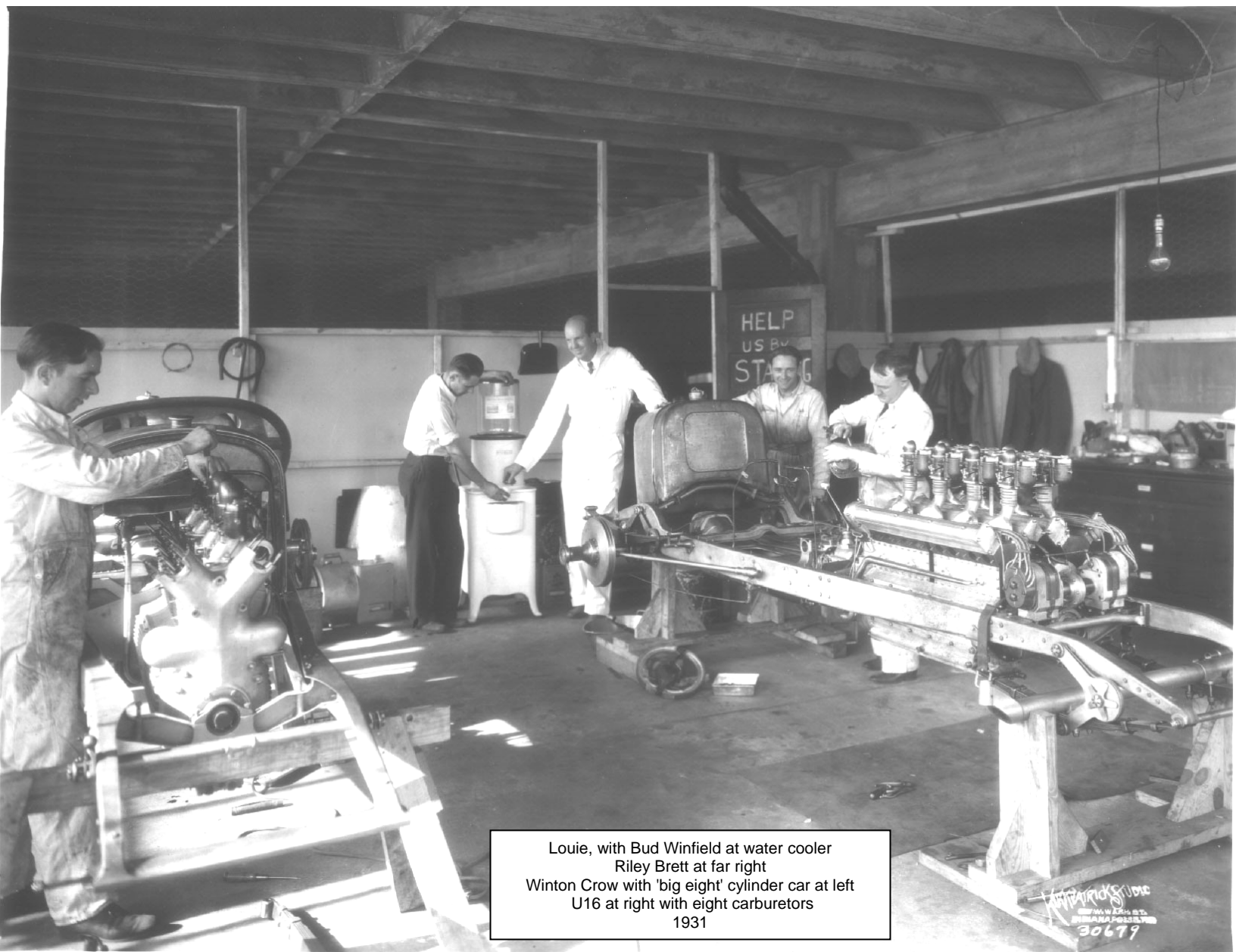
Frank Lockhart had crashed to his death on Daytona Beach early in 1928 in what was called the Stutz streamliner (for the sponsor). Its V-16 engine was assembled by **RILEY BRETT** a veteran race-driver and car-builder.

With their winnings, Lou and Sam bought one of Lockhart's two race cars from his widow, Ella. Brett bought the remains of the streamliner wrecked at Daytona (the Beach car).

Bill Spence in #14 1928 winning car  
Louie in Lockhart's 1926 winner  
Sam behind Spence, Paul Miller and Pop with Lou



With Brett they went to work on a new car for 1930. **MYRON STEVENS**, a master craftsman body-builder who had worked with Harry Miller joined with them. The new car was to have two 8-cylinder 91 CID Miller engines, sitting vertically, each with its own crankshaft, and geared together to a common out-put shaft. This configuration is called the U-16. A V-16 would have the engines inclined towards a common crankshaft.



Louie, with Bud Winfield at water cooler  
 Riley Brett at far right  
 Winton Crow with 'big eight' cylinder car at left  
 U16 at right with eight carburetors  
 1931

**BUD WINFIELD**, brother of Ed Winfield, a genius at grinding competition camshafts, worked with Louie and Riley on setting up the eight carburetors they put on the U-16 in 1931.

**DALE DRAKE** was Louie's riding mechanic in 1932, the last year he drove the U-16. During 1930 and 1931 they built several cars to sell to other teams.

Riley Brett, Alden Sampson  
Lou Meyer, Dale Drake  
1932





**DALE DRAKE**  
Intrepid Aviator, Manufacturer, Racer  
and Builder of Fine Racing Machinery

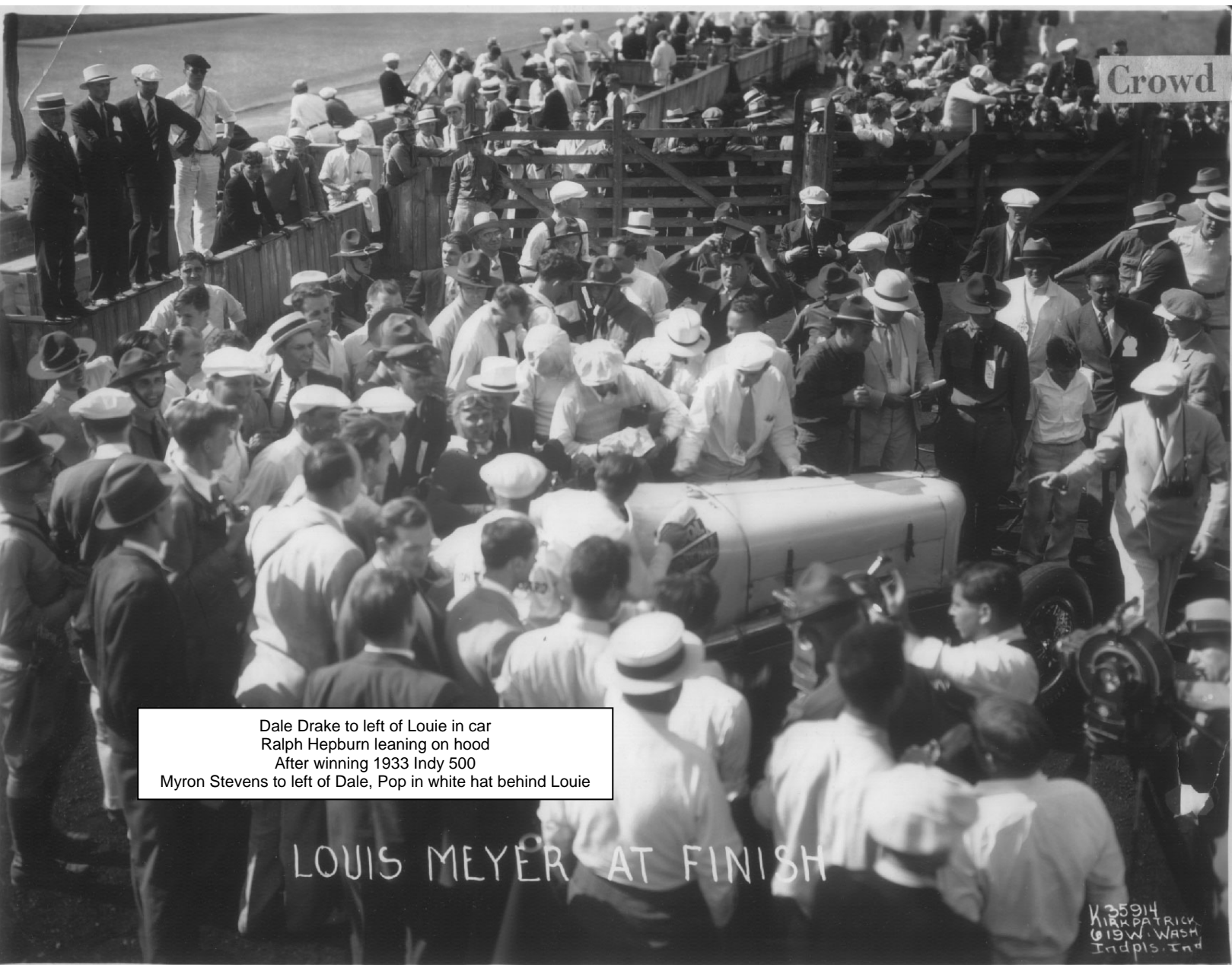


**DALE DRAKE**  
with experimental German glider

Some of the cars were driven by Louie and **BOB CAREY** to establish speed records to enhance their sale. Just as Henry Ford had done for the promotion of his cars and the Ford Motor Corporation twenty-five years earlier.



In 1933 Louie drove the car of his friend, driver-owner **RALPH "HEP" HEPBURN** to his second win at Indy with Indianapolis restrauteur, **LAWSON HARRIS** as riding mechanic.



Harris would ride many times with Louie after that. For 1934, Meyer, Stevens and Drake built a new car in Louie's garage at his Walnut Park, California home and he won with it at Indy, for the third time, in 1936.



Charlie Volcker (?) back to camera  
Dale in cap, Myron Stevens  
Louie, in the Meyer garage at Louie's home  
1934



The 4-cylinder engine for the 1936 winner came from the shop of **FRED OFFENHAUSER** who had taken over the Miller shop, and retained the invaluable services of designer/draftsman **LEO GOOSSEN**. Offenhauser continued to improve the Miller engine until he sold out to Meyer and Drake in 1946. Even then Goossen stayed on with Meyer & Drake and remained with the engine shop until his death in 1974.

Fred Offenhauser Myron Stevens Wilbur Shaw

Walter Sobraske (ca 1937)

Fred, with one of his engines

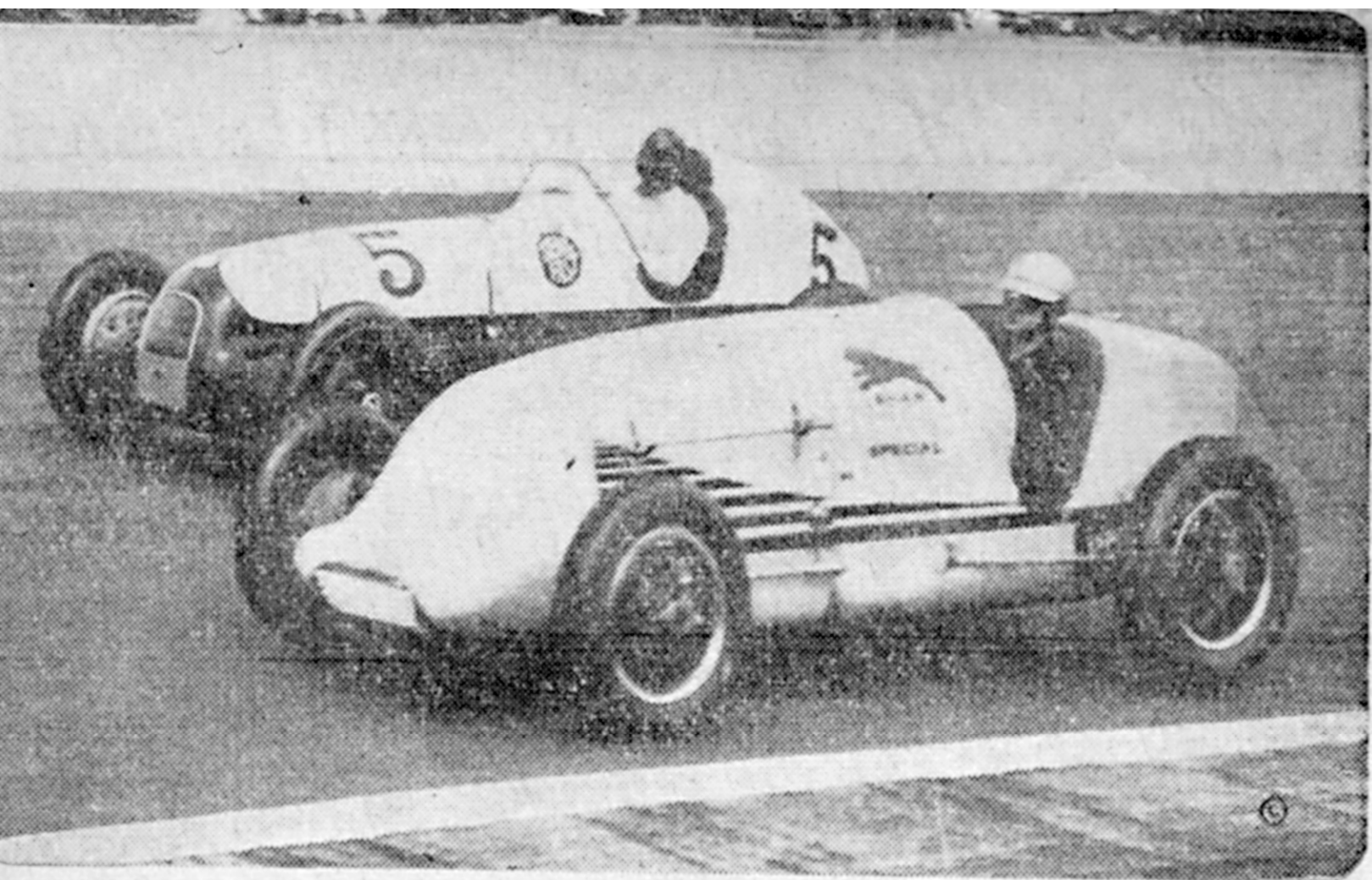




In 1937 Lou drove a car belonging to the **MIKE BOYLE** team, whose mechanic, **COTTON HENNING** neglected to provide for cooling air through the belly-pan. **HARRY MEYER**, Louie's kid brother rode with him, the last year that riding-mechanics were required.



In 1938 and '39 Lou teamed up with sponsor **BOB BOWES** a wealthy accessory manufacturer in a valiant, but eventually fruitless venture to win at IMS for a fourth time.



This shows Wilbur Shaw, nearest the camera, and Louie Meyer, big money winners at the Speedway, in a practice lap before last year's race.

1938



The Meyer-Bowes car  
with straight-eight supercharged engine  
1939

From 1939 to 1946 Louie ran a Ford V8 engine rebuild plant in Vernon, California with partner, **LEW WELCH**.



Lou on right  
inspects Ford blocks ... 1940s

Welch was a supplier to the Ford Corporation and a friend of Henry Ford, and was the sponsor behind the 1941 Novi V8 in one of the 1935 front-engined Millers.

In 1939 **GORDON SCHROEDER** and Riley Brett resurrected the old V16 of Frank Lockhart's. Sponsored by Al-den Sampson, they ran the old engine for a few years in a Myron Stevens car.

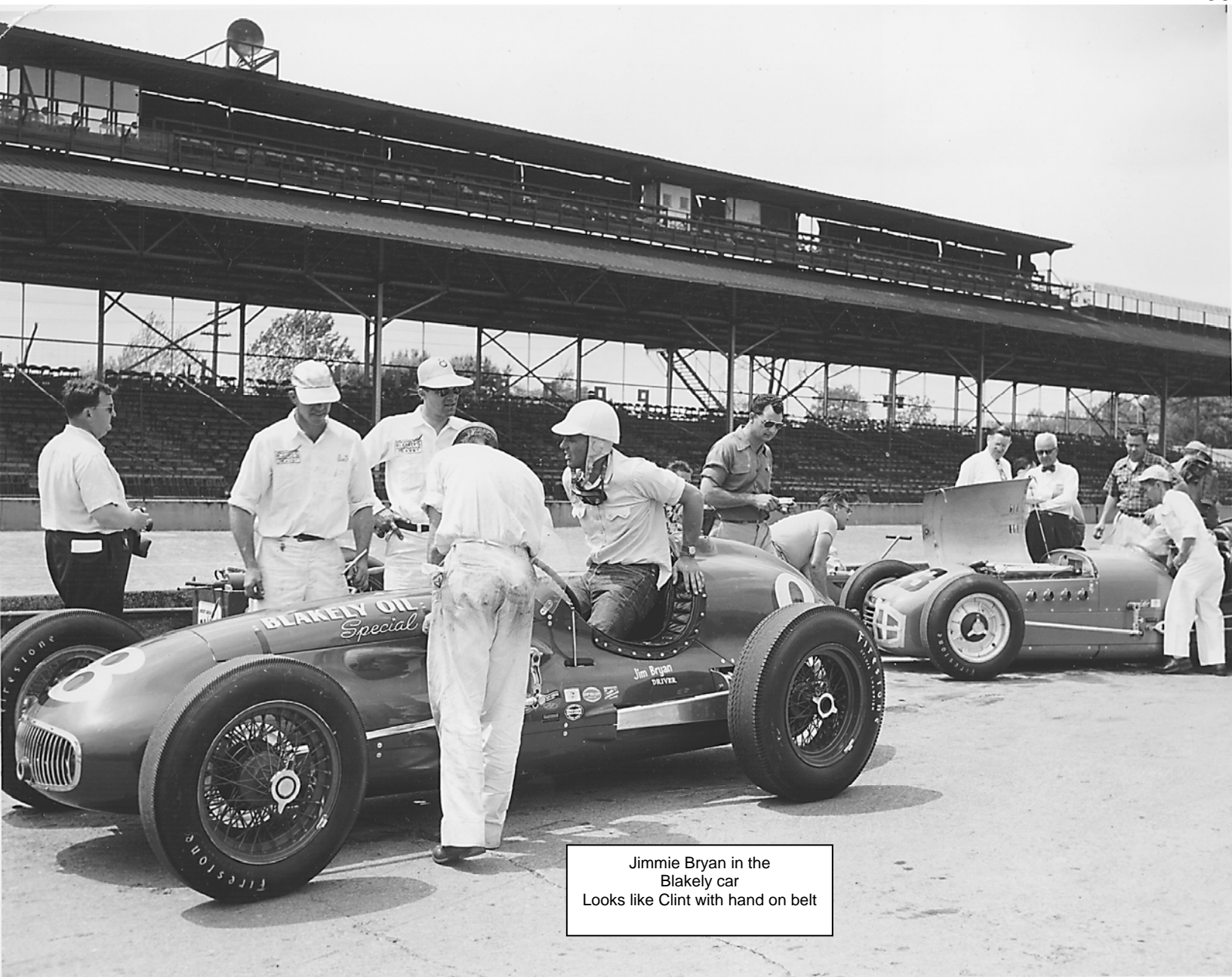
Schroeder also built cars with Stevens for Blakely Oil and **CLINT BRAWNER** in the 1950s.

**CLINT BRAWNER**  
**Master Mechanic**  
**Builder of Winning Champ Cars**



**CLINT BRAWNER**  
**with an Offy engine**



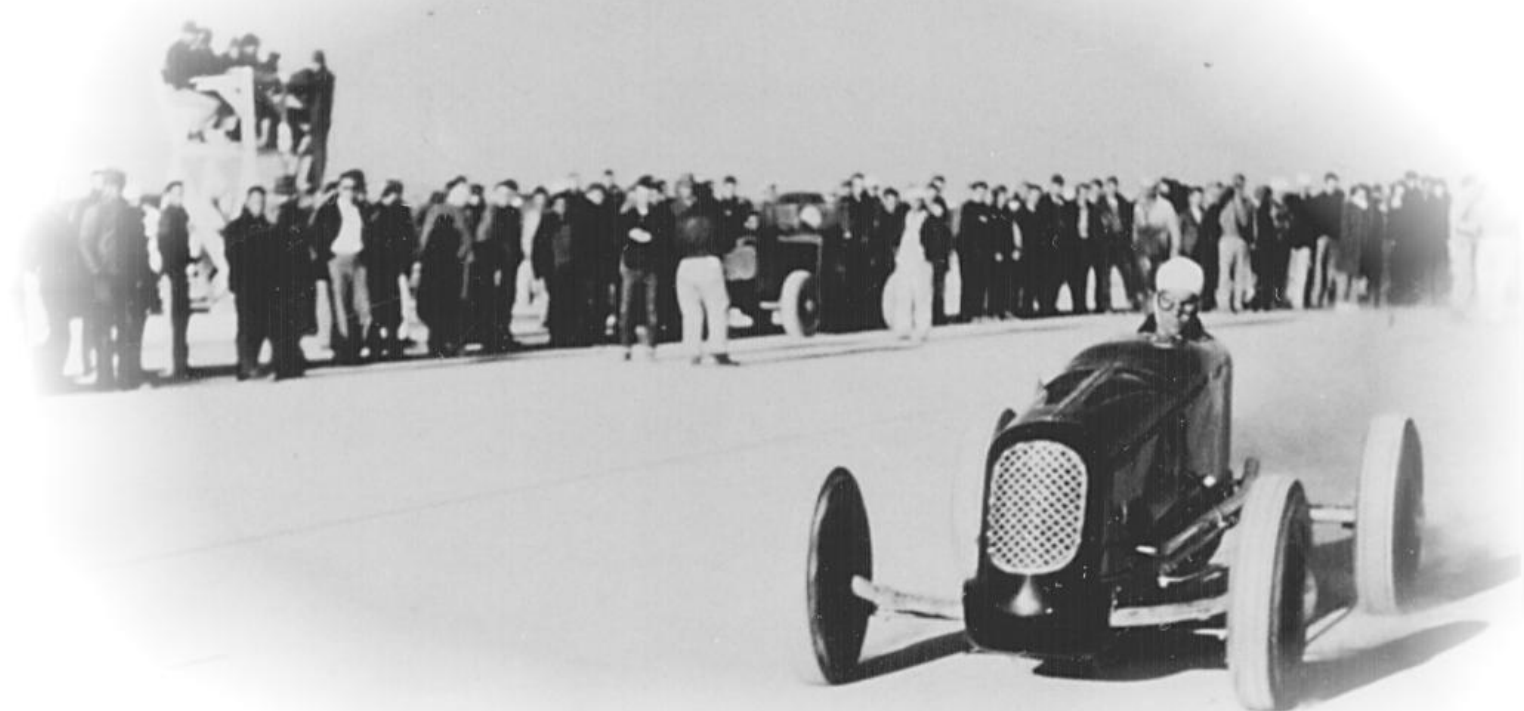


Jimmie Bryan in the  
Blakely car  
Looks like Clint with hand on belt

Louie and his friend Dale Drake formed Meyer & Drake Engineering Corporation in 1946 to buy out Fred Offenhauser to manufacture the 4-cylinder 'Offy' racing engine. The partnership broke up in 1965 and Dale set up Drake Engineering and Sales Corporation to continue to build the engine.

As Meyer & Drake, they continued the changes and improvements essential to the competition for the *Racer's Edge*, as Fred and Harry and Leo had done for the past three decades. In 1948 they learned that **STUART HILBORN** had invented and developed a fuel injection system more efficient and effective than the carburetors they had been using. In 1966 AiResearch and **HERB PORTER** got together to develop turbocharging for the Drake-Offy. Hilborn worked with them on the stubborn fueling problems.

**STUART HILBORN**  
**Chemist, Inventor, Hot-rodder,**  
*Racer and Manufacturer*

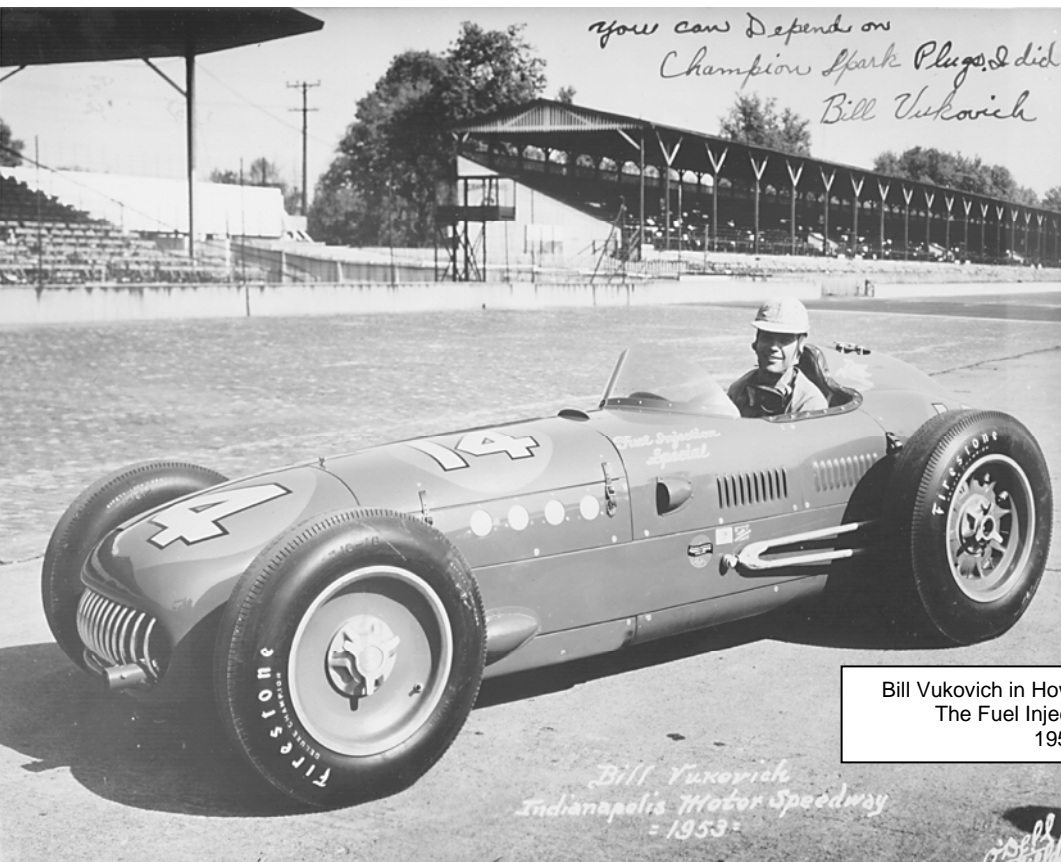


**STUART HILBORN at speed**  
**at El Mirage dry lake**  
**ca 1948**



Maurie Rose  
an early believer in Hilborn fuel injection systems

M&D tried it and liked it and became dealers for the Hilborn fuel injection systems. Stuart had been working with friend **JIM TRAVERS** on the injectors and they later worked with **FRANK COON** on a **FRANK KURTIS**-built car for wealthy sponsor, **HOWARD KECK**. It was driven by **BILL VUKOVICH** to a near-win at Indy in 1952 and then two wins back-to-back in 1953 and 1954 ... all with the Hilborn-injected Meyer & Drake Offy 270 engine. Travers and Coon later formed Traco Engineering to develop race engines and other equipment.

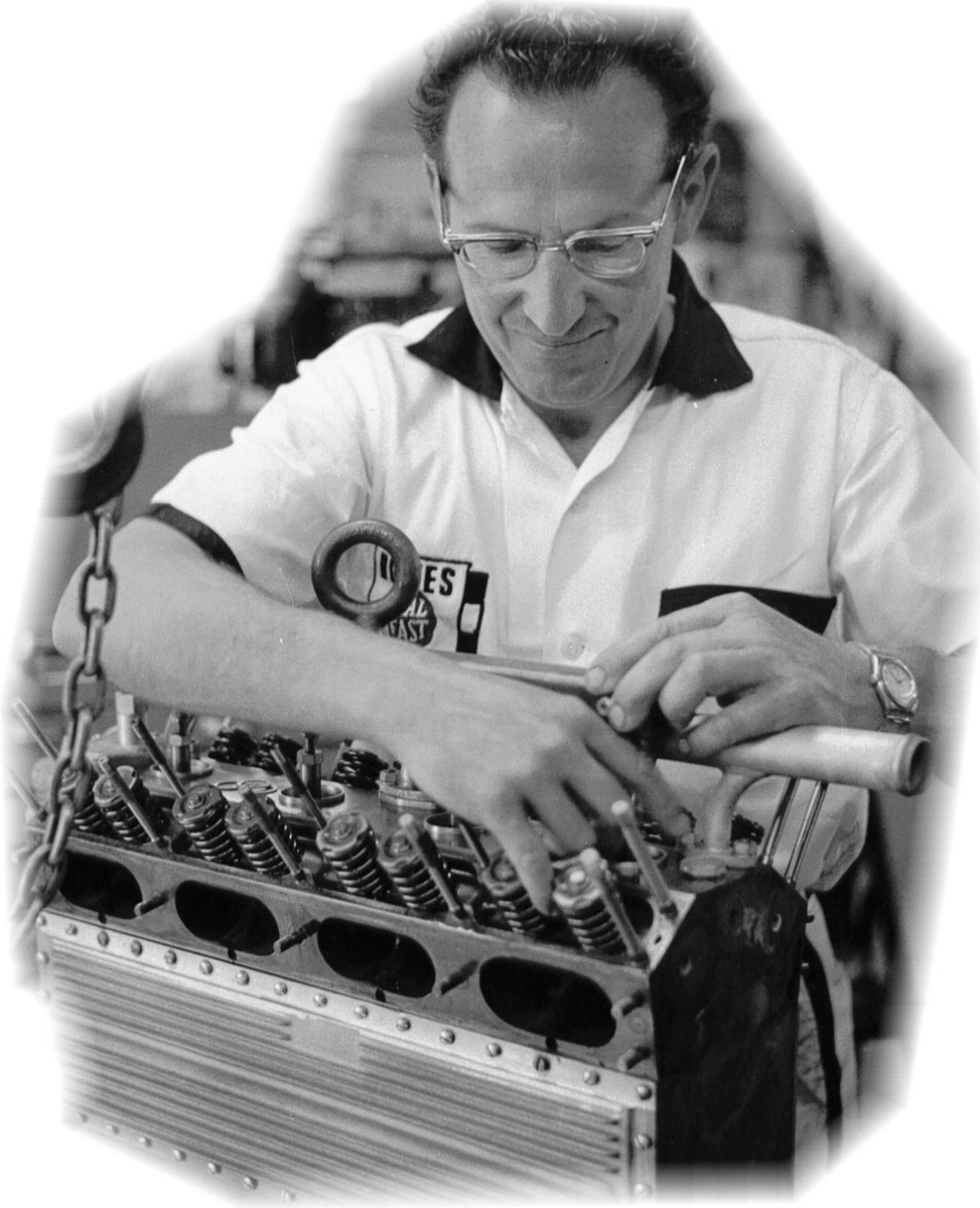


Bill Vukovich in Howard Keck's Kurtis  
The Fuel Injection Special  
1953

**GEORGE BIGNOTTI** came to Indy in 1954 as a mechanic and became the most winning, hands-on, chief mechanic in the history of racing.

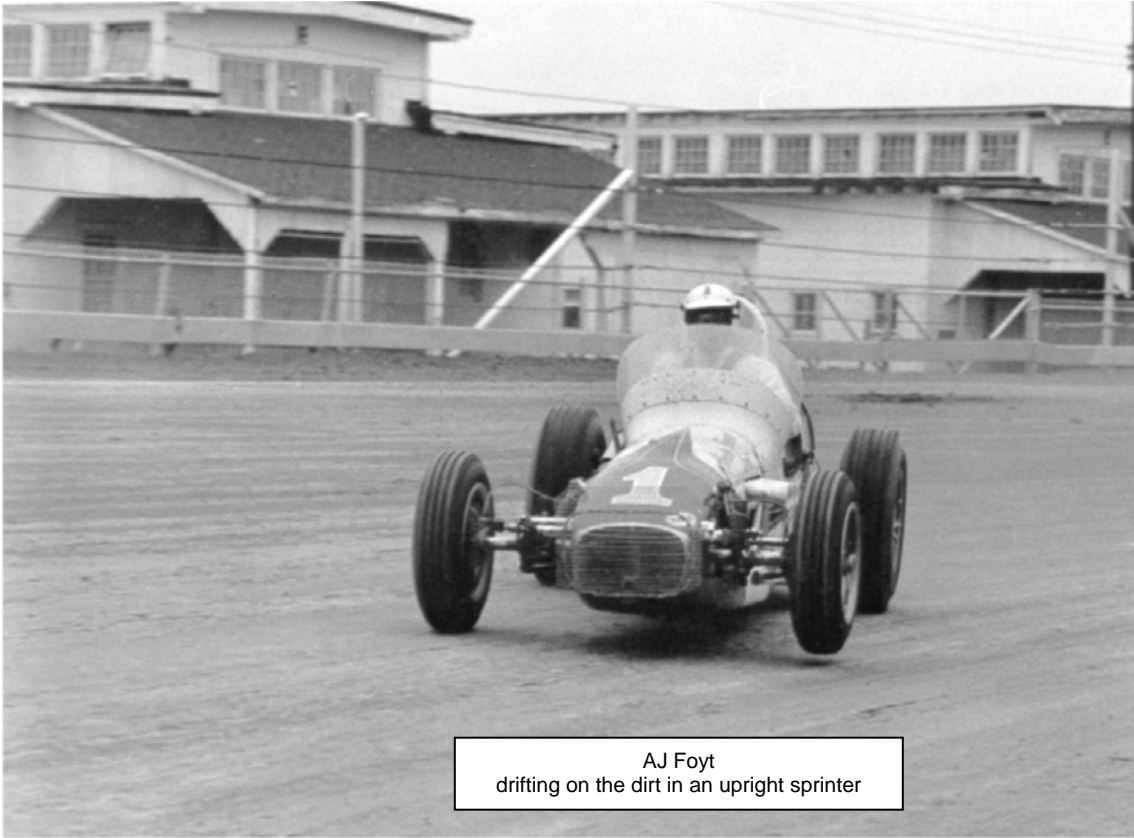
**GEORGE BIGNOTTI**

Master Mechanic, Builder of Racing Cars and Engines  
His cars were winners, the fastest and most reliable of the day

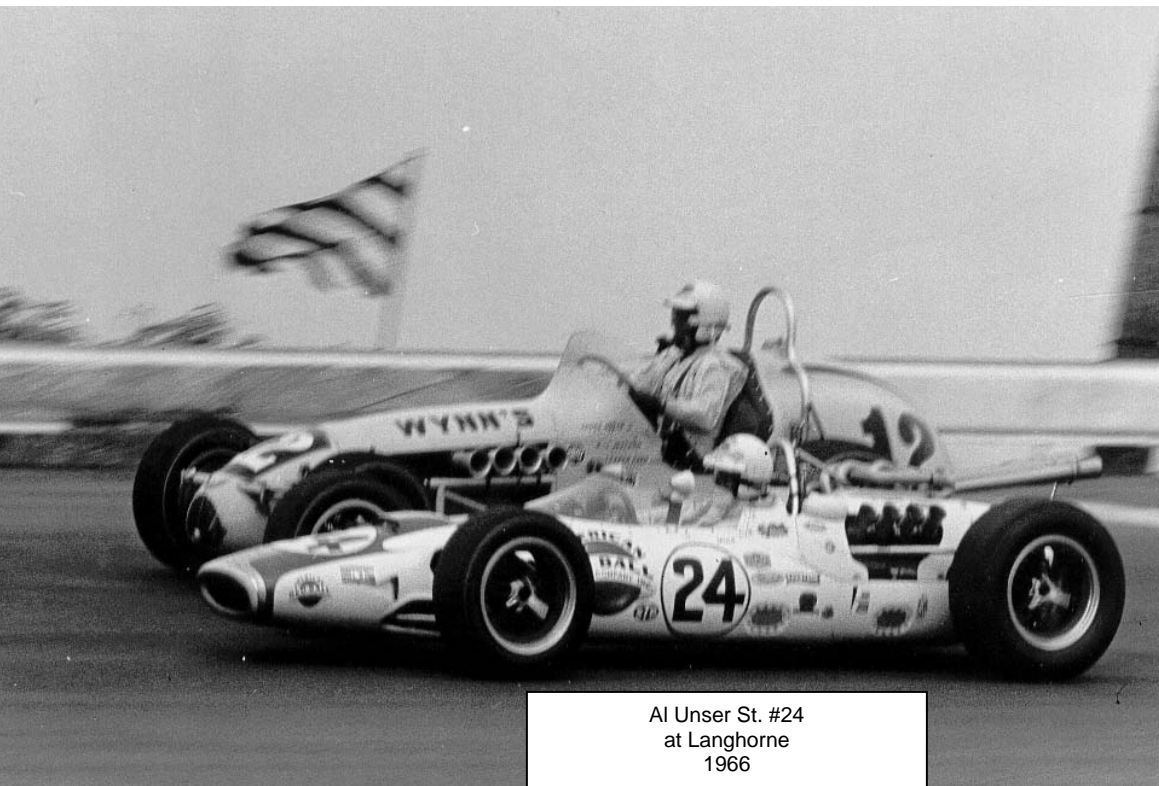


**GEORGE BIGNOTTI**  
with his hands into an Offy  
in the 1950s

George's top drivers were **AJ FOYT**, and then, **AL UNSER SR.** When Ford jumped into the racing wars in 1963 it was the first time in many years there was any competition for the Meyer & Drake engines.



AJ Foyt  
drifting on the dirt in an upright sprinter



Al Unser Sr. #24  
at Langhorne  
1966



There is an epic story about the Offy engine which was deemed obsolete by its makers as early as 1949 ... but its best days were still ahead of it ... and its epic battles with the racing engines of the Ford Motor Company.

The story is about Dale Drake, his son, John, their friends in the racing community and how they developed the Offy engine to its highest state of performance.

When Dale Drake decided to continue building the four cylinder Offy after Lou Meyer sold out in 1965 he was facing the financial and engineering-technical might of the Ford Motor Company. There were other signs of change ... the Cooper-Climax at Indy in 1961 foreshadowed lighter cars with rear engines and smaller, supercharged engines.

The Drakes, with Goossen, immediately designed and built a short-stroke version of the venerable 4- cylinder Offy. At the same time they began to experiment with supercharging. First with positive displacement Roots-type superchargers, then, and more successfully, with turbo-chargers.

Engine heat was going up, so were mechanical stresses. Could the engine stand it? Some failed. Design changes were made. Leo was keeping up with rapidly evolving needs to be competitive.

Dale and John Drake and staff were dealing with dozens of owners, their team mechanics and engine builders to keep ahead. A watershed had been crossed. Racers wanted to hone the racer's edge to its finest point. It was expensive, and hard on the engines. boost pressures went to 100 inches or more ... whatever the racer want to risk. Engines blew up. Tempers flared. Fingers were pointed.

But, Drake Engineering worked through it all and continued to build successful engines. Winning the Indianapolis 500 six times, and a total of 91 championship races in the period 1966-1980, with the last win coming in 1978.

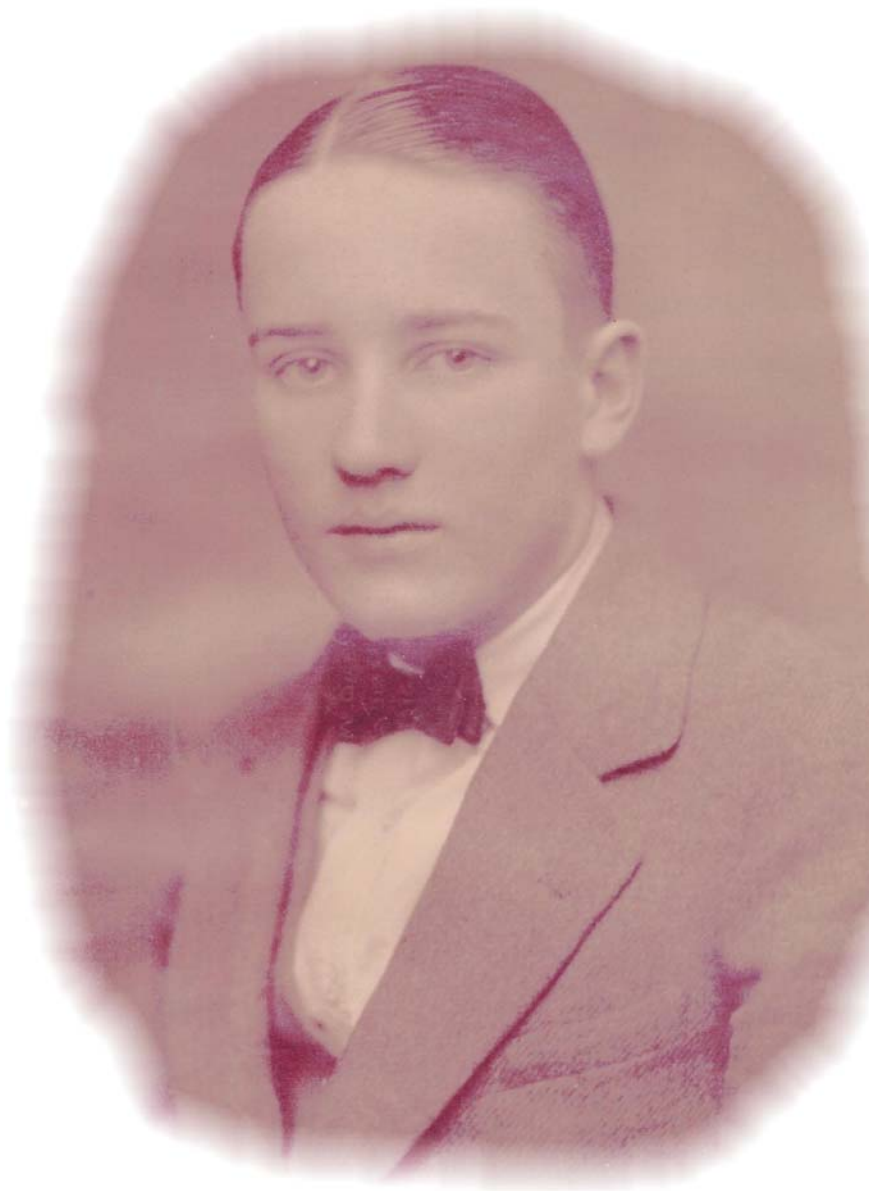
Leo, as the principal architect of almost all of the championship, sprint and midget engines raced in this period, holds a record of sorts for each win produced by the cars, engines and components he crafted over his long career.

## DRAKE BACKGROUND ...

**1889** ...JA Drake sets up blacksmith shop in Reedley, California ... near Fresno.

**1906** ... Leo Goossen at 15 years of age, joins Buick ... Walter Marr, Buick chief engineer, and race manager from 1904 to 1911, selects prodigy Leo as protégé to do developmental work behind locked doors ... Leo works on overhead camshaft design, V12, V6 engines and does some work for the race team.

Leo as a young draftsman at Buick



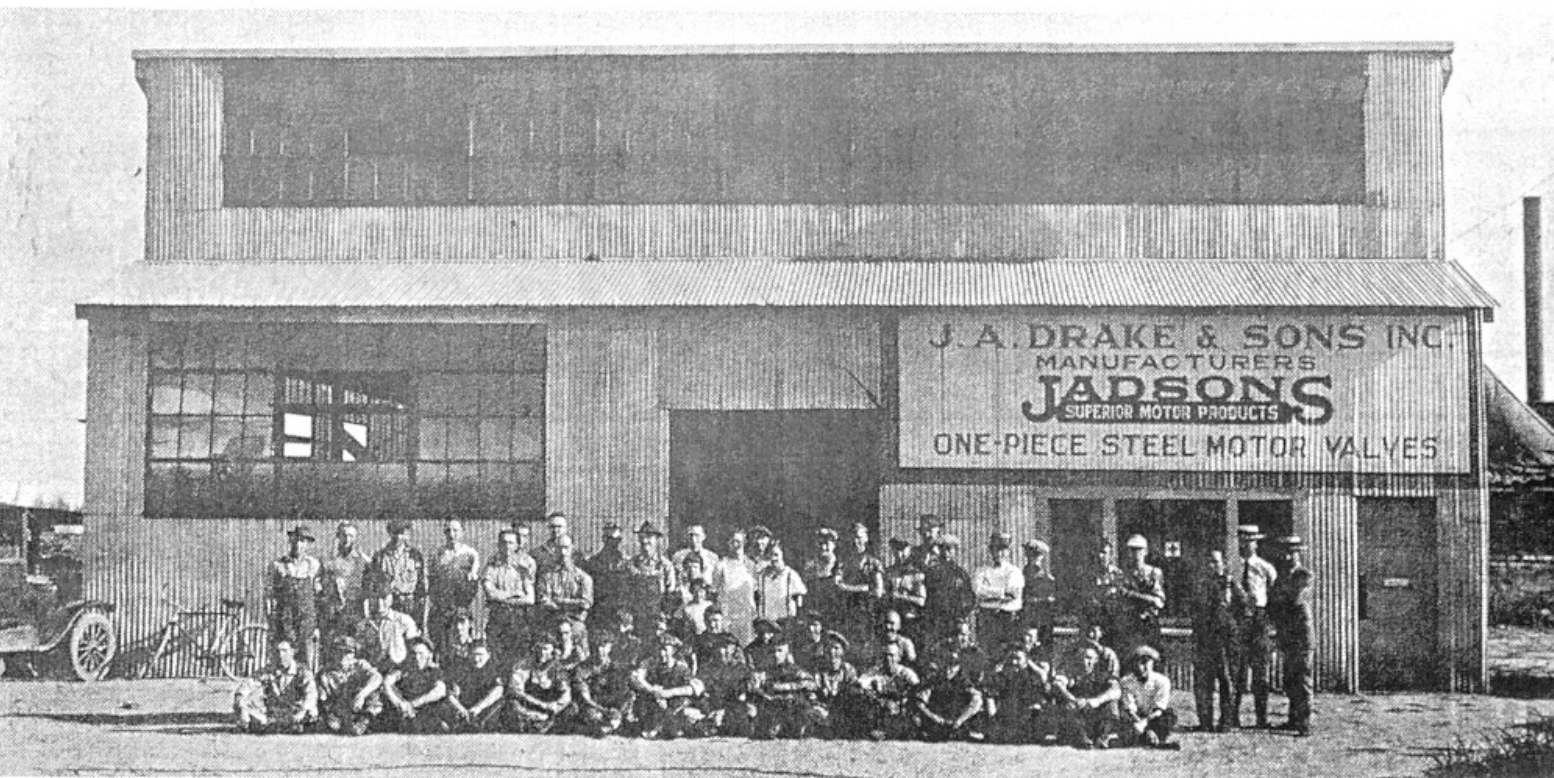
Shown in the racing car with which he competed in Lowell, Massachusetts in 1908 is "Wild" Bob Burman, this Buick racer based on the 1908 Model D chassis.

Bob Burman in Buick racer ... 1908

**1915** ... Dutch Drake builds Drake Special and makes racing valves for it and supplies valves to Miller in 1919 for 4-cylinder auto racing and aero engines. Dale rides with him in this picture. Both went on to work in the Jadson plant until it was sold in 1937.



REEDLEY EXPONENT, Thursday, July 20, 1972



## Home of 'Jadson'

This is a picture taken during the time that the J. A. Drake & Sons business was located on South (now Dinuba) near East Avenue. It was here that the company designed and manufactured the now famous Jadson one-piece steel motor valves

Jadson was a big outfit. They built the 4-valve, overhead camshaft engine and racecar to demonstrate their valves which were superior to those produced by the auto manufacturers

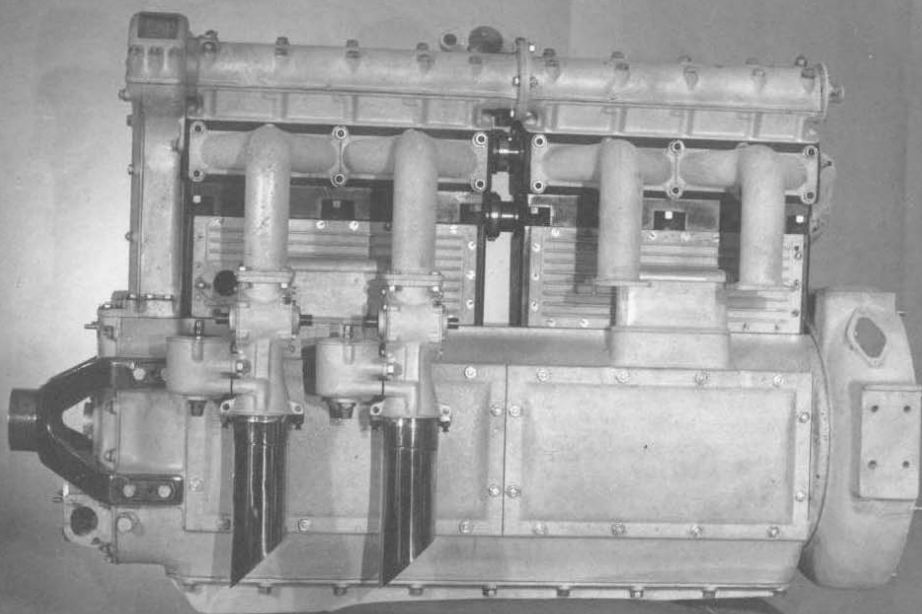
**1917** ... Leo leaves Buick and heads west.

**1920** ... Leo joins Miller (and Fred Offenhauser) in Los Angeles ... Miller history goes on thru Offenhauser, Meyer & Drake, and finally, Drake Engineering, as covered by Griff Borgeson, Mark Dees, Gordon White, Ken Walton .... and others.

Eddie Meyer and his first racer in 1919 ... mostly a stripped, stock model T ...

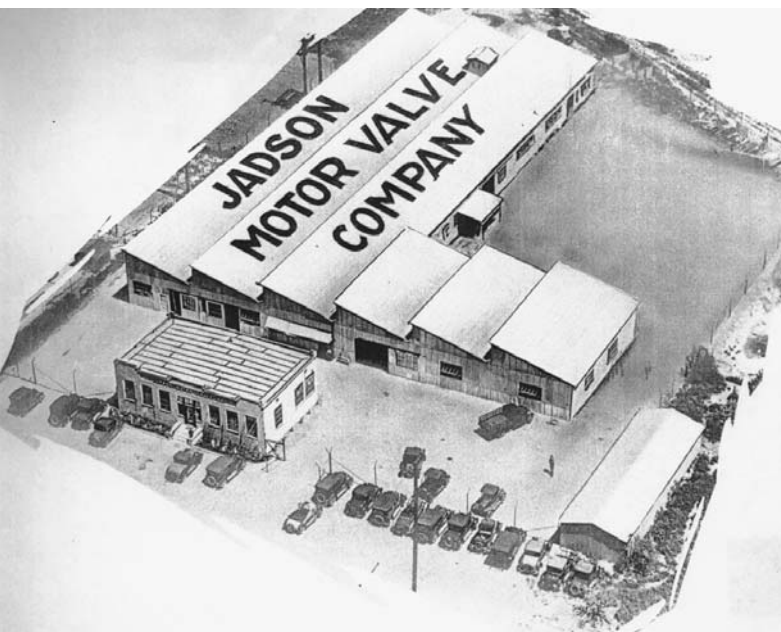


An early Miller engine ... possibly the first 183 of 1921 ...





Dale Drake had experience building gliders when he assembled this 'Jenny' and went barnstorming with nephew Marvin ...

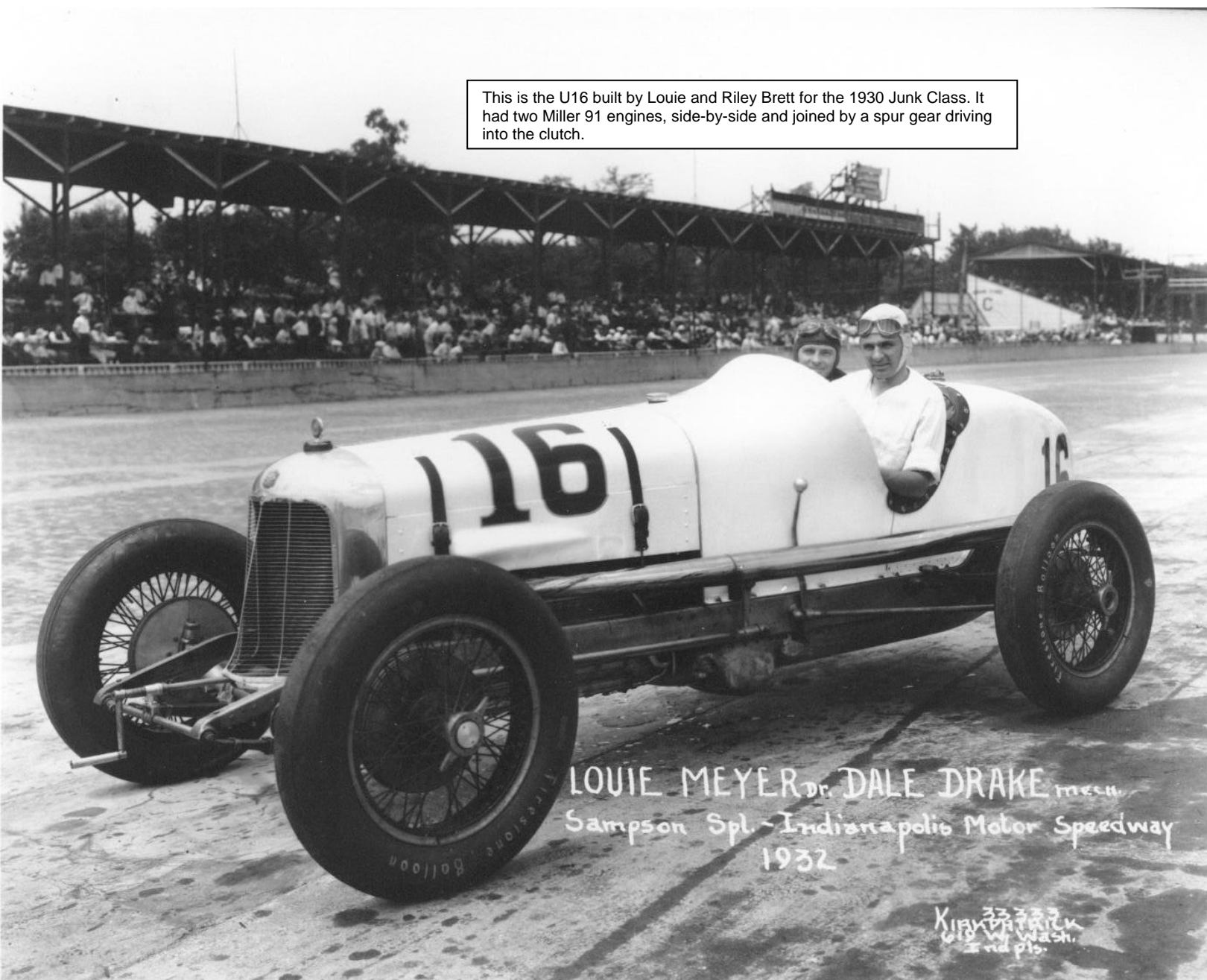


They built this shop on Wilcox street in Bell in 1929, then sold to Thompson Products in 1937 ...



**1930** The Junk Car Formula was established to encourage the use of passenger-car engines. The idea was to reduce costs and promote grass-roots racing. The factories took up the challenge. Studebaker, Ford and others mounted major campaigns to qualify at Indy. Stutz, Oakland, Duesenberg, Chrysler, DuPont, Hudson, Buick and others all had a crack at winning Indy and other championship races.

Cars had to carry a driver and riding-mechanic, engines were allowed up to 366 cid. Supercharging was not allowed. Lou Meyer and Dale Drake teamed-up in the U-16 in 1932.



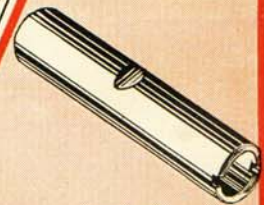
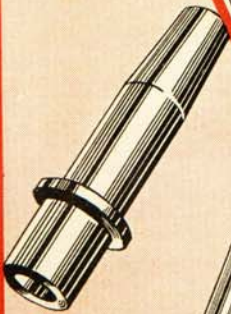
But Miller, then Offenhauser won just about every year, anyway. Harry Miller went bankrupt following the 1929 stock market crash. His impact on racing had been immense, but became clouded during the 1930s. Eddie Rick-enbacker, owner of the Indianapolis Motor Speedway, loosened things up, a little, in 1937 and a few supercharg-er/blowers appeared.

EFFECTIVE AUGUST 15, 1932

# JADSON'S

## PISTON PINS

**C-R-D**  
and  
**PLAIN**



**JADSON'S**  
**"SUPERIOR"**  
**Motor Products**

*"Supreme on the*

*Speedways & Highways"*

**JADSON MOTOR PRODUCTS COMPANY**

8354 WILCOX AVENUE « « « BELL » » » LOS ANGELES, CALIFORNIA

»» 1932 PRICES AND SPECIFICATIONS - - -

AUGUST 15, 1932 ««

Jadson had a vast catalog. They made engine parts for almost every engine in the country ...



# JADSON

## VALVES & VALVE GUIDES

COMPLETE SPECIFICATIONS  
AUGUST-1934

**JADSON MOTOR PRODUCTS CO.**  
8354 WILCOX AVE., BELL, CALIFORNIA.



## Short History of JADSON'S Valves

**T**HE first JADSON'S VALVES were hand-forged for a racing motor in California in 1915. These first JADSON'S VALVES were so exceptional in their performance that racing drivers everywhere eagerly demanded them, because they withstood high heat and extreme seating velocity.

Today the racing car market is a very small part of the national demand for JADSON'S VALVES. Repairmen want the valves that the racers prefer.

Over 1200 types of JADSON'S VALVES are carried in stock, and the JADSON factory is one of the most modernly equipped in the automotive world.

## National Champions Use JADSON'S

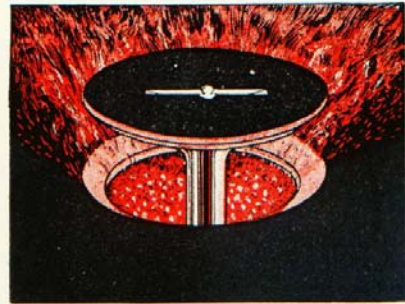
**T**HE outstanding racing car builder—Mr. Harry A. Miller—uses JADSON'S VALVES exclusively. Below are some National Racing Champions who use JADSON'S Motor Products:

Billy Arnold	Ernie Triplett
Harry Hartz	Frank Elliott
Louis Meyer	Jimmy Murphy
Lou Schneider	Lou Moore
Ralph Hepburn	Bob Carey
Stubby Stubblefield	Wilbur Shaw
Ralph DePalma	Chet Gardner
Shorty Cantlon	Fred Frame
Peter de Paulo	Howard Wilcox

Manufactured by

**JADSON MOTOR PRODUCTS CO.**  
BELL, LOS ANGELES

*Sales Offices and Warehouses in Principal Cities*

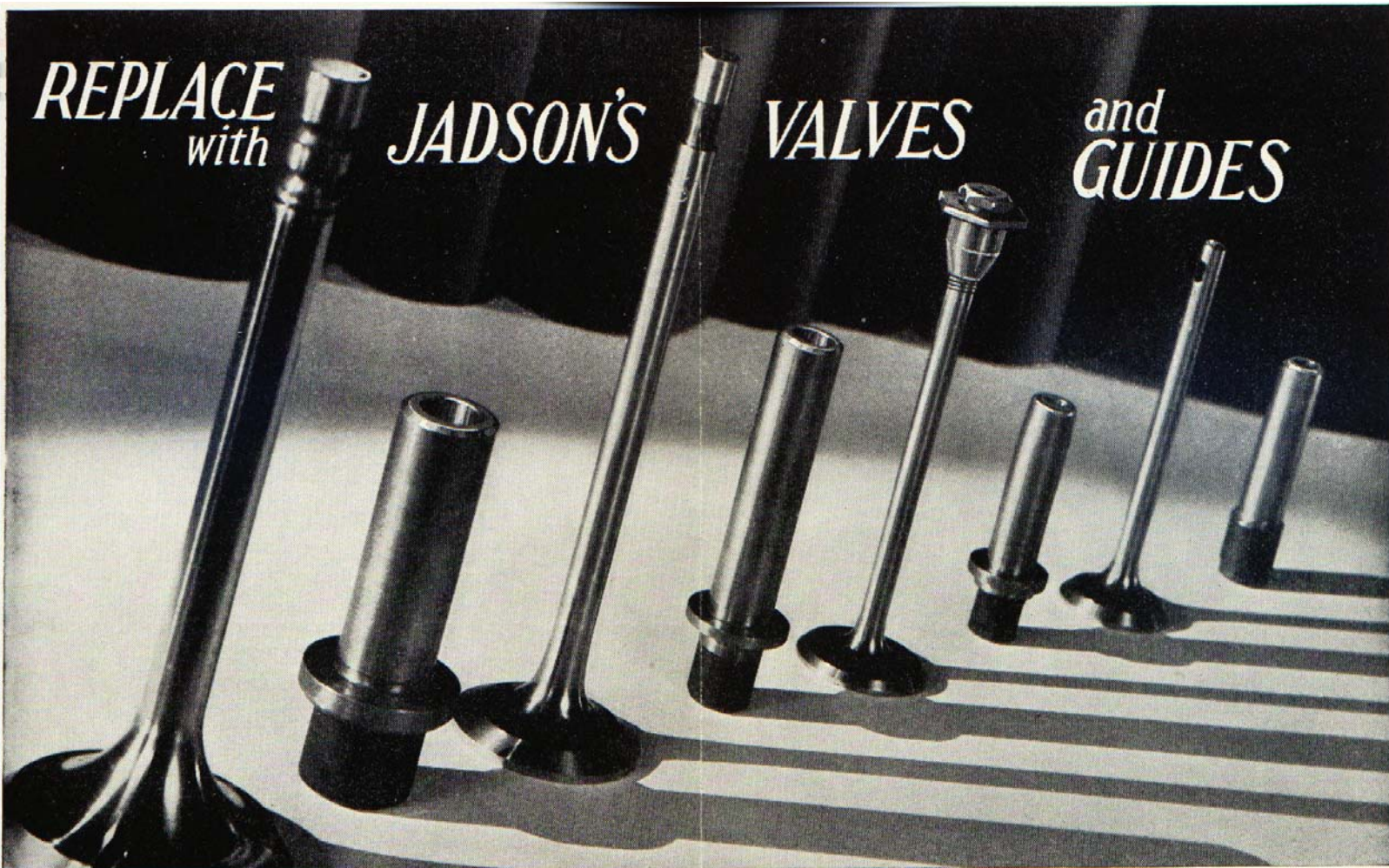


**WHERE  
REAL  
Motor Economy  
BEGINS**





# REPLACE with JADSON'S VALVES and GUIDES



**W**HEN low mileage indicates valve trouble, replace with JADSON'S VALVES, which soon pay back their cost and more by increased fuel saving and smooth motor performance.

Specially designed, made from special steels, to meet higher speeds, higher compression fuels, and higher temperatures of today,—that is why the Champion Drivers prefer JADSON'S. Made for Inlet and Exhaust duty for all types of cars, trucks, tractors, motorcycles, airplanes, racing and commercial engines. Unconditionally guaranteed for material and workmanship.

It costs only a trifle more to put in a new set of JADSON'S VALVES than to grind the old valves, and you will have perfect satisfaction and save money on your daily driving.

JADSON'S GUIDES are made by an original, different method employing the principle of rifle-boring, making a straighter, smoother, and truer hole, with greater bearing surface, and more positive alignment—these increase the life and efficiency of the valve.

When replacing with JADSON'S VALVES, also insist on JADSON GUIDES for a perfect combination, then real motor economy begins!



NOVEMBER  
1936

# JADSON

**VALVES  
GUIDES  
SEATS  
PISTON PINS**

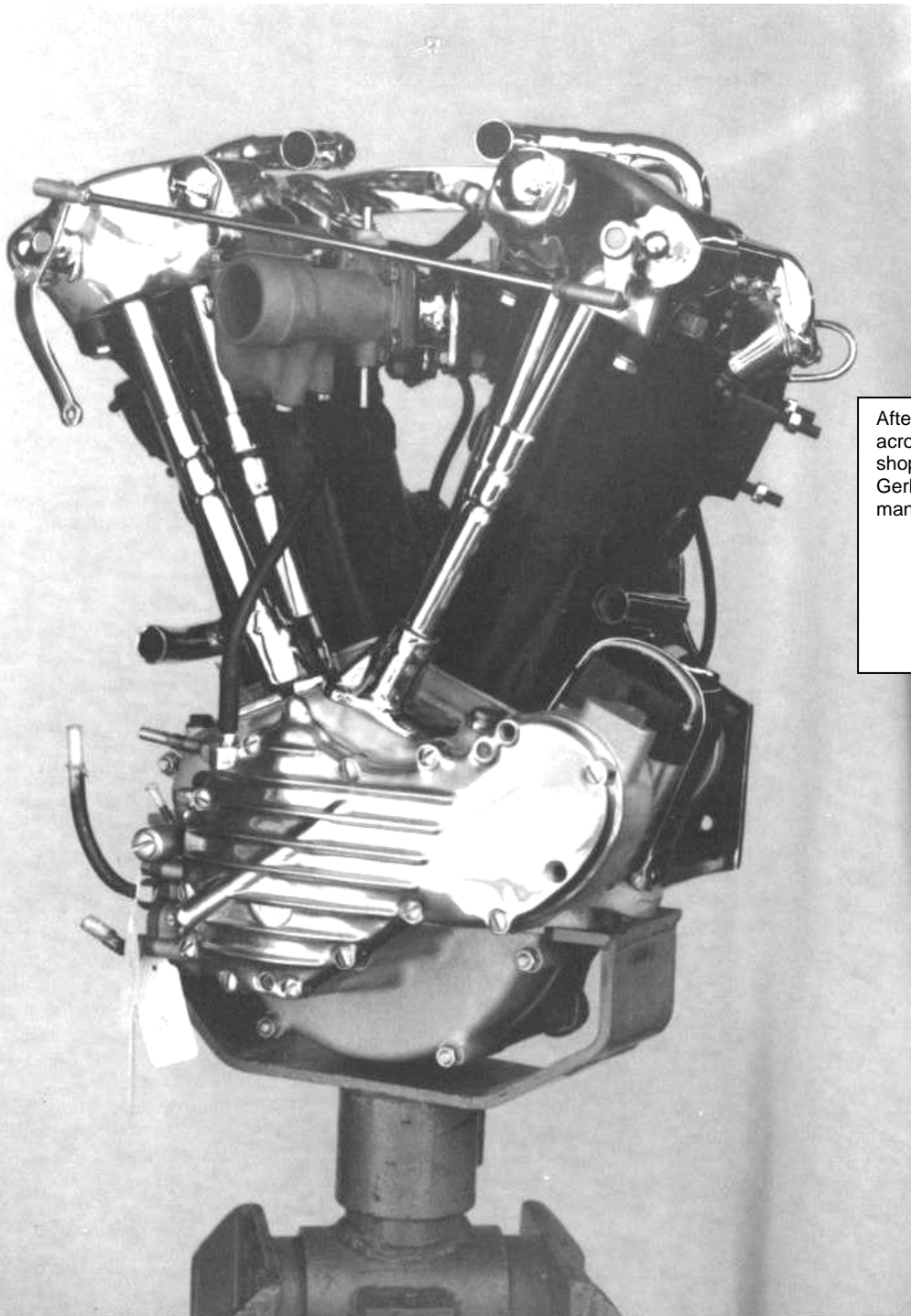
*Superior*

# MOTOR PRODUCTS

**1938** Things were opened up to drop the mechanic, and reduce displacement. Lou Moore's I-4 270 was driven to the front by Floyd Roberts, while Lou Meyer's I-8 with supercharger was a DNF, and in '39 qualified 2nd to the I-6 of Art Sparks, at 130.067. And no one qualified for the pole faster until 1948 when Rex Mays did 130.577 in Louie's old car! Wilbur Shaw won in his 8CTF Maserati in 1939 and 1940. In 1941 the Novi made its first appearance.


1938 Rules allowed engine capacity of ...274.590 NA or 183.060 S/C


<u>No.</u>	<u>Owner</u>	<u>Engine cid/builder</u>	<u>Driver</u>	<u>Qualifying position and speed</u>	<u>Result</u>
#23	Lou Moore	Deidt /270	Floyd Roberts	Q1 @125.681	WIN



After Jadson was sold Dale rented space in buildings across Wilcox Street and became a specialty machine shop. This is the midget engine he built. Later, Fred Gerhardt, and old friend from Fresno, took over the manufacture ...

The PACIFIC COAST SPEEDWAY NEWS





Sanctioned by United Racing Association—Approved by Pacific Coast Speedway Association.

VOL. 1      SAN DIEGO, CALIFORNIA, WEDNESDAY, JUNE 15, 1946      No. 10

# New-Design Drake Midget Motor Scheduled For Mass Production in California Plant

D. M. C. 89 Cu. In. MIDGET RACING MOTOR.  
2 Cylinder Vee type water cooled

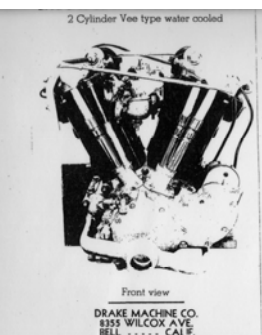


## Speed Circles Buzz

By BURT CHALMERS  
LOS ANGELES—Mass production of racing jobs—and that definitely is something original—is the ambitious and sensational program laid down by the newly organized Drake Machine Corp. But is such a fantastic or impossible when one considers that the Drake outfit is not a Johnny come-lately herd of alloy bolt cutters but the cream of the crop in professional racing car engineering.

## Local Flavor at Indianapolis NINETEEN L. A. ACES IN 500-MILE RACE

By HUGH FINNEY  
CHICAGO, June 15 (AP)—America's all-time sports crowd, will join the Indianapolis Motor Speedway and millions more will have some of it on the radio, and results will be watched from Kansas, Mo., to Rome, Italy—tomorrow.



Front view  
DRAKE MACHINE CO.  
8155 WILCOX AVE.  
BELL ..... CALIF.

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# S. E. Youth Is Nation's Youngest Speed Pilot



LITTLE DRAKE—Johnny Drake, 4032 Cudahy st., is the nation's youngest A-hydroplane racer. The Southeast youth, who just recently turned 12, has competed in six major races. He will appear in the National Outboard Regatta at the Long Beach Marine Stadium, July 12. —Photo by Bob Ruskau.

## Johnny Drake Now Veteran At Age of 12

Spinning over the water speeds up to 60 miles an hour in a trim Class A hydroplane usually considered more than man-sized job. But for you Johnny Drake of 4032 Cudahy st., it's just another thrill anybody with the nerve can enjoy.

John Drake was a boater from his earliest days. As a boy racer, and as an offshore racer using race engines built in his shop ...

Johnny Drake continues to get that hydroplane iplo place against adult competition . . . came in 3rd in one race Sunday at the Marine Stadium and 7th in another . . . we think that's mighty good . . . congrats Johnny.

The A Hydros starting at Mission Bay before a crowd of 40,000 persons.

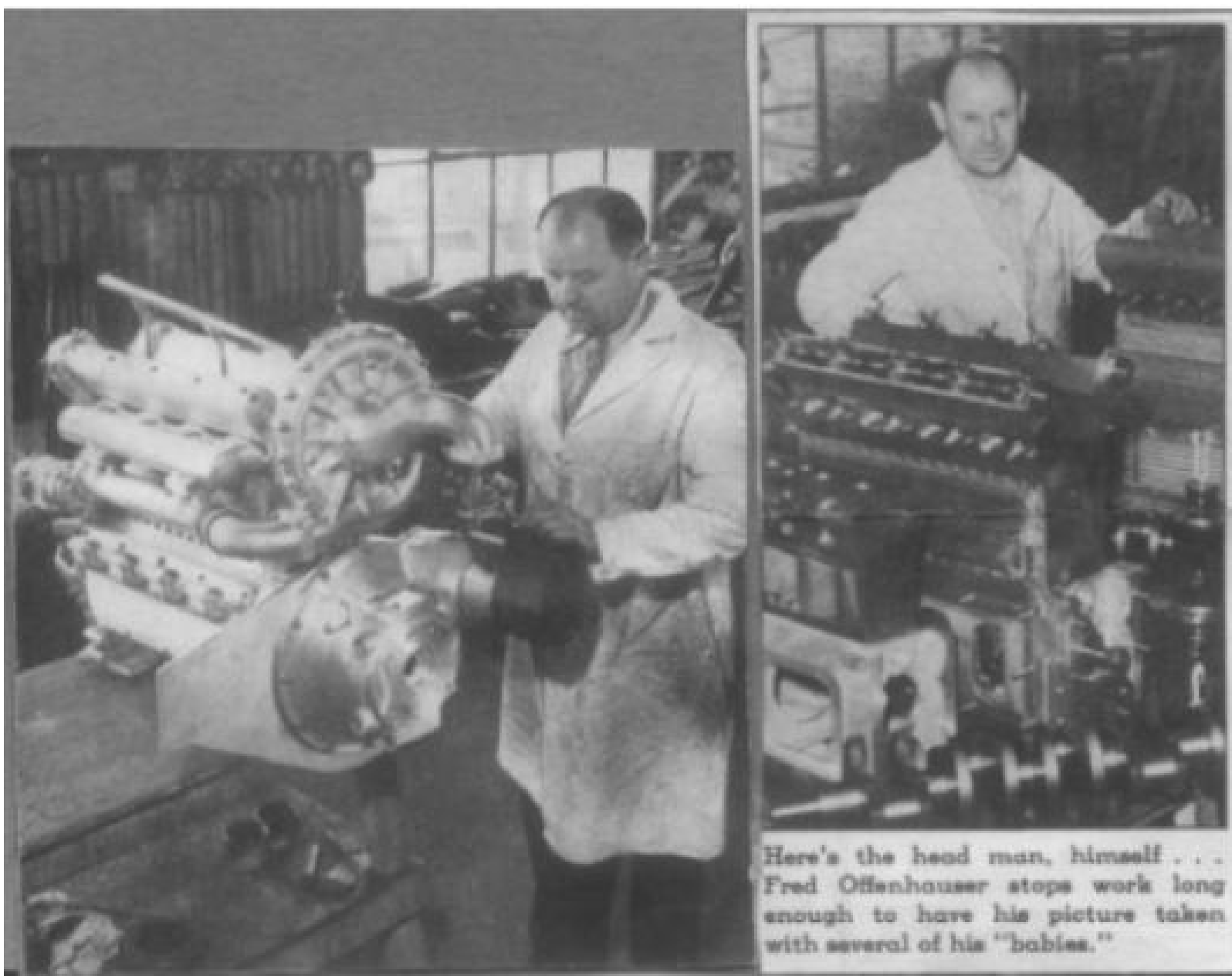






John Drake ... at speed ... 1970s

**1946** Meyer & Drake operated as a partnership of Louis Meyer and Dale Drake from 1946 until July of 1965. George Robson won Indy with the inline 6-cylinder engine built by Art Sparks. It was derived from the standard four cylinder Offenhauser engine. From then, until Indy of 1965, except for Pike's Peak, only the Ford Motor Company could produce a competitive engine, and that wasn't until 1963, when Jimmy Clark won at Milwaukee for their only win that year. Ford engines produced two wins for Parnelli Jones in 1964 and nine wins in 1965 for a variety of drivers. From 1946 to 1969 the Offy won 245 champ-car races. Some of the early engines may have been built by Fred Offenhauser before 1946, but the bulk of them were built by Meyer & Drake. USAC and other records are not very clear on the engines used.



Here's the head man, himself . . . Fred Offenhauser stops work long enough to have his picture taken with several of his "babies."

Fred Offenhauser built a new brick shop next to his Miller shop at Gage and Gramercy in 1941. Looks like the Novi engine and a bunch of other engines. He was building a lot of midget and sprint car engines. During the war he made specialty parts for the military.



ARTICLES OF INCORPORATION OF  
DALE DRAKE MACHINE CORP.

ONE: The name of this corporation is: DALE DRAKE MACHINE CORP.

TWO: The purposes for which this corporation is formed are:

(a) To own, operate, maintain, manage, equip, improve, repair, alter and otherwise deal with, use and enjoy, to invent, design, develop, assemble, build, construct, fabricate, manufacture, buy, import, lease as lessee and otherwise acquire, to mortgage, deed in trust, pledge and otherwise encumber, and to sell, export, lease as lesser and otherwise dispose of goods, wares, merchandise and personal property of every sort, nature and description.

(b) To purchase, acquire, own, hold, lease either as lesser or lessee, sell, exchange, subdivide, mortgage, deed in trust, plant, improve, cultivate, develop, construct, maintain, equip, operate and generally deal in any and all lands, improved and unimproved, dwelling houses, apartment houses, hotels, boarding houses, business blocks, office buildings, garages, stations, warehouses, manufacturing works and plants, and other buildings of any kind, and the products and avails thereof, and any and all other property of any and every kind or description, real, personal and mixed, wherever situated, including water and water rights.

(c) To acquire, by purchase or otherwise, the goodwill, business, property rights, franchises and assets of every kind, with or without undertaking either wholly or in part the liabilities of any person, firm, association or corporation; and to acquire any business as a going concern or otherwise (1) by purchase of the assets thereof wholly or in part, (2) by acquisition of the shares or any part thereof or (3) in any other manner, and to pay for the same in cash or in the

IN WITNESS WHEREOF, for the purpose of forming this corporation under the laws of the State of California, we, the undersigned, constituting the incorporators of this corporation, including the persons named hereinabove as the first directors of this corporation, have executed these Articles of Incorporation this 29<sup>th</sup> day of December, 1945.

LOUIS MEYER  
LOUIS MEYER  
G. W. THOMAS  
G. W. THOMAS  
DALE DRAKE  
DALE DRAKE

STATE OF CALIFORNIA )  
COUNTY OF LOS ANGELES ) ss

On this 29<sup>th</sup> day of December, 1945, before me, NIXON A. LANGE, a Notary Public in and for said County and State, residing therein, duly commissioned and sworn, personally appeared LOUIS MEYER, G. W. THOMAS and DALE DRAKE, known to me to be the persons whose names are subscribed to the foregoing Articles of Incorporation, and acknowledged to me that they executed the same.

WITNESS my hand and official seal.

NIXON A. LANGE

NOTARY PUBLIC IN AND FOR THE COUNTY OF LOS ANGELES,  
STATE OF CALIFORNIA.

Lou Meyer joined Dale in his business in December 1945. In the spring of 1946 they bought out Fred Offenhauser.



Lou Meyer

Leo Goossen

Dale Drake

In 1946 George Robson won Indy in the Thorne Engineering, Sparks 6 cylinder powered Adams. Rex Mays won three races with Lou Meyer's, Goossen-designed, Offenhauser 8 cylinder engine in the Bowes car and George Connor and Tony Bettenhausen each won one race with an Offy. It was pretty much all Offys after that. The Lou Moore, Deidt front wheel drive 'Blue Crown Specials were successful in the hands of Mauri Rose and Bill Holland using high-test gas and light-weight, low-profile construction. The 270 Offy-powered cars only ran at Indy winning 1947, 1948 and 1949, with second-place finishes in 1947 and 1948.

First Indy win for Meyer & Drake. They would win them all until 1965!



After Louie and Dale Drake bought the shop from Fred in 1946, they continued to experiment with supercharging. But the technical demands of tuning the blown engines was too much for the state-of-the-art on gasoline alloy. They built the light weight, stretched midget, "99" car for the engine. It was successful and won Indy with a bigger engine, but the pounding on the bricks was too much for the lightly built car. It is now usually called the 'Belanger' car.





CHICK  
HIRASHIMA  
MEYER-DRAKE  
ENGINE SPECIALIST

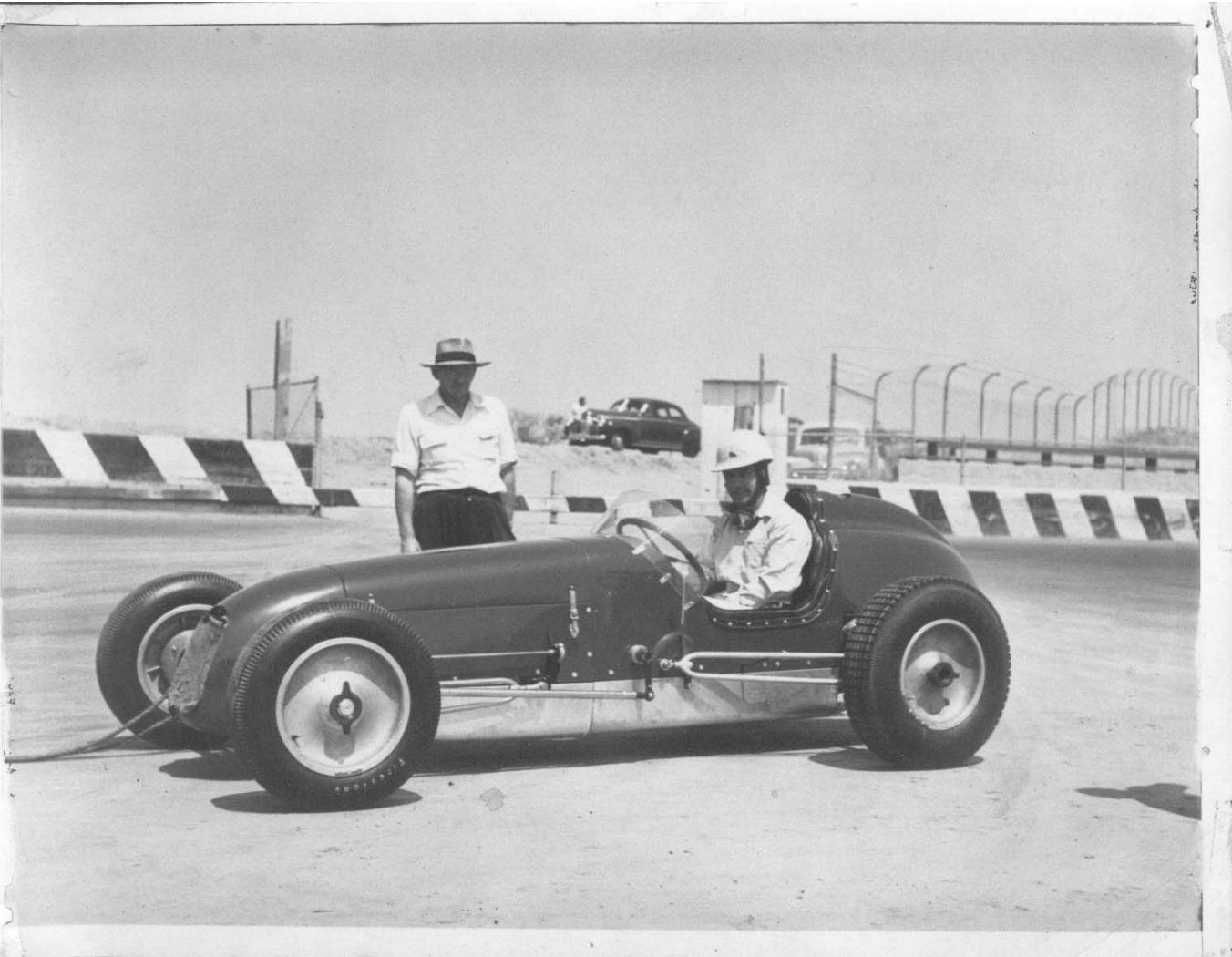
DALE  
DRAKE  
PRES. OF  
MEYER-DRAKE

LOU  
MEYER  
3-TIME INDY  
WINNER

NEHAMKIN

(A)



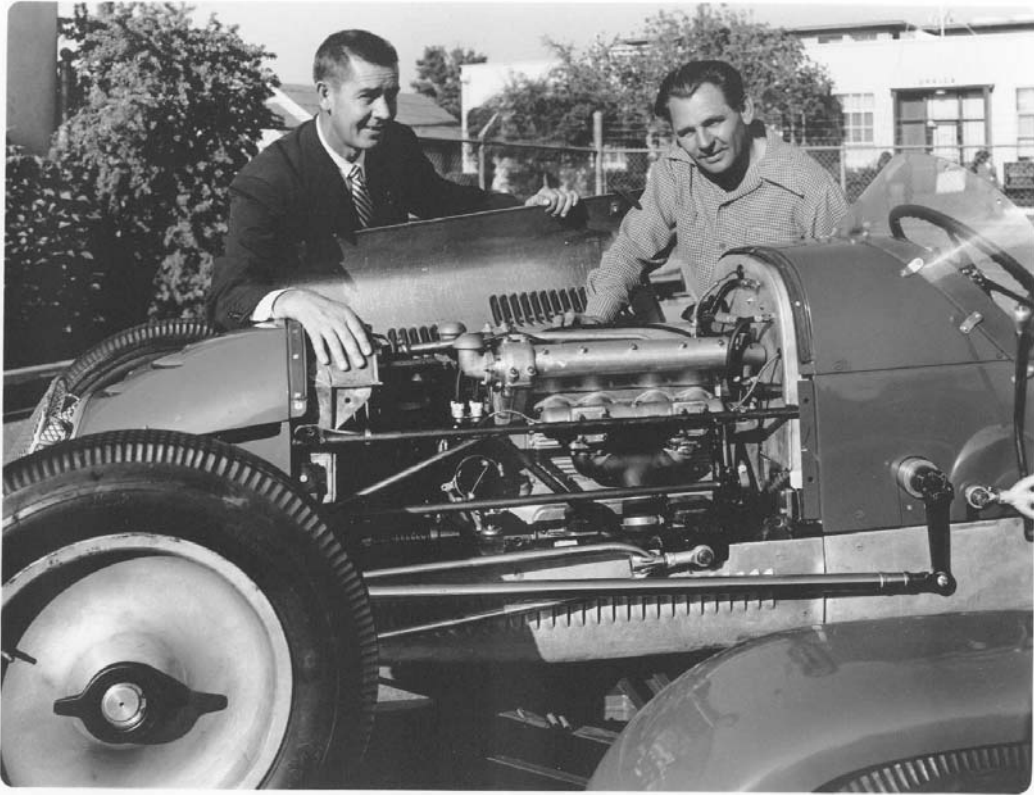






Tony Bettenhausen, with Sonny Meyer behind him ... Looks like the race was on dirt ... see extended windscreen ...





**1950** The 4-cylinder 270 cid Offys were dominant! The blown Novis still ran. Cummins entered their turbo-charged diesel-engined car. The roadsters, looking like hot rods with tonneau covers, came in in 1953. And the un-blown Offys kept on winning.

Over-square Novis, the M&D #99 'stretched' midget, M&Ds 177 cid engines, Hoosier Race Team, Belanger, Ross Page ... all dealt with supercharging. And struggled through the 1950s trying to find that 'Racer's Edge'.

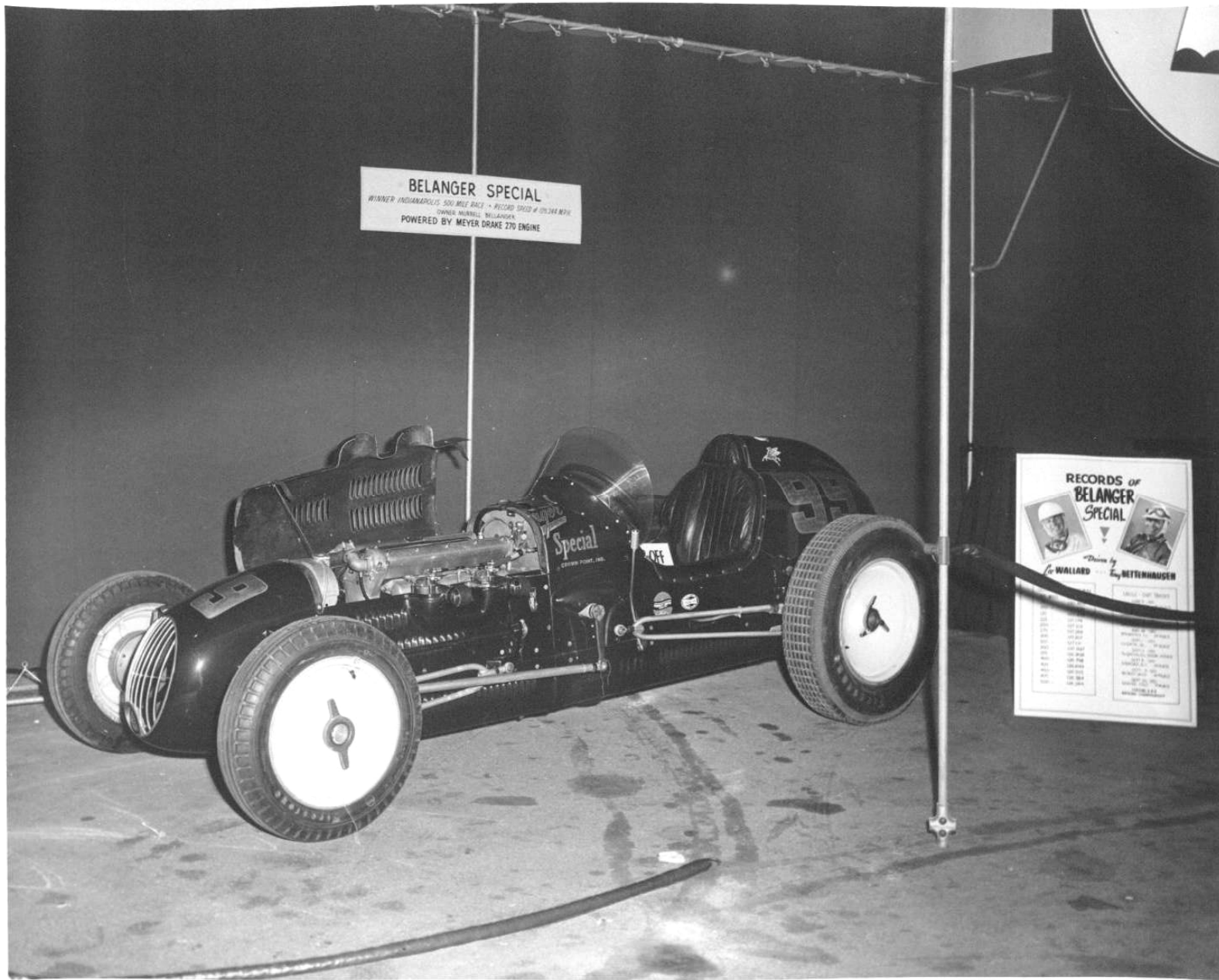


Sometimes known as the '99' car, it is better known as the 'Belanger' car.

Driven initially by Tony Bettenhausen, Meyer & Drake proved their point and sold the car to a customer rather than compete with them.

Lee Wallard won Indy in 1951, but with a larger, non-supercharged engine. The car took quite a beating during the race as various parts collapsed under the strain of champ car racing in an experiment as a 'pony car'.









Troy Ruttman was the youngest winner of Indy. His Meyer & Drake 'Offy' was equipped with Hilborn fuel injection ... a first win for Hilborn ... below with 'Aggie' ...





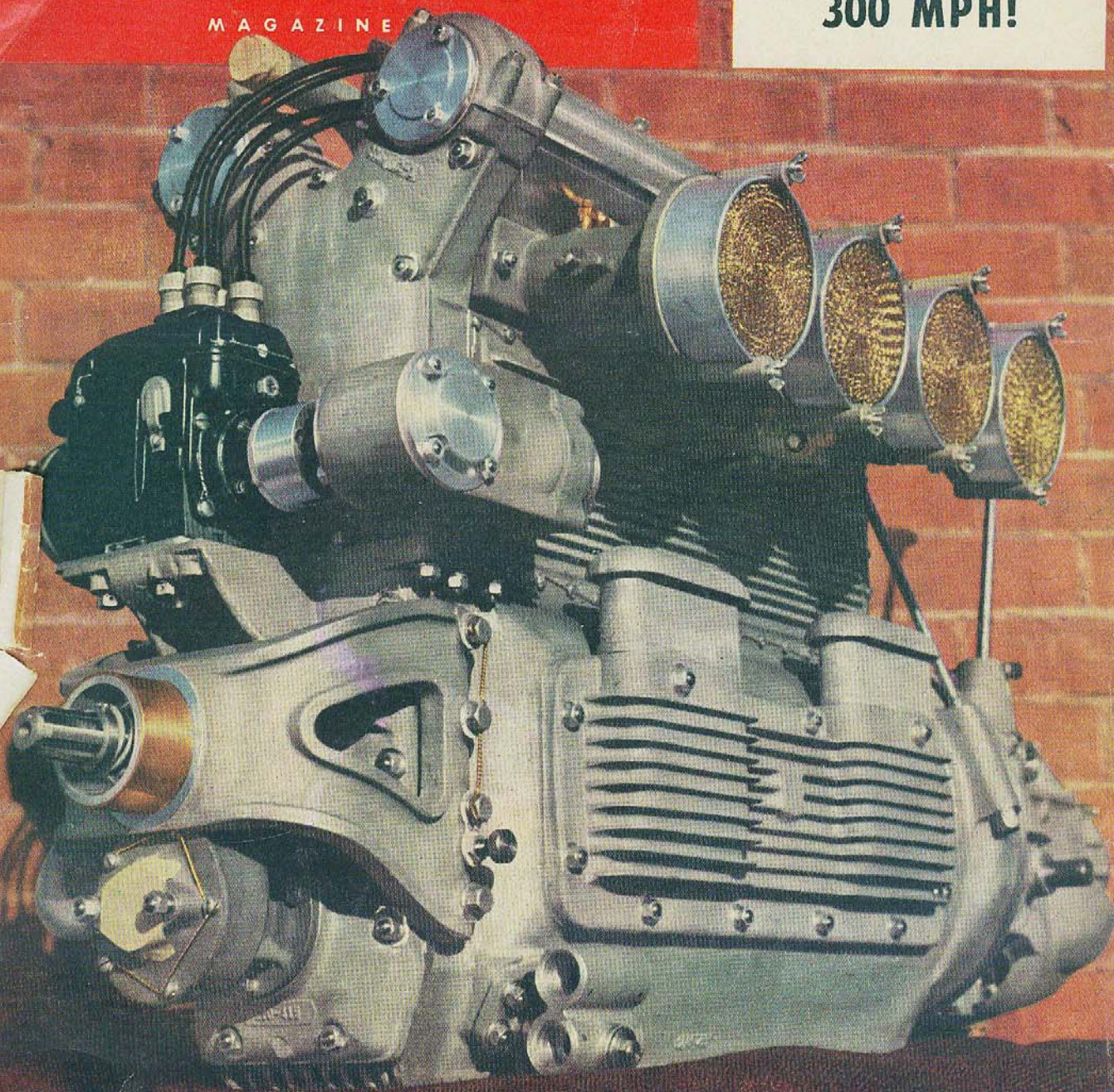
Story of the 270 OFFIE—Champion of the Speedway

# HOT ROD

MAGAZINE

JUNE 1952 25c

America's Newest  
Hot Rods Aim at  
300 MPH!

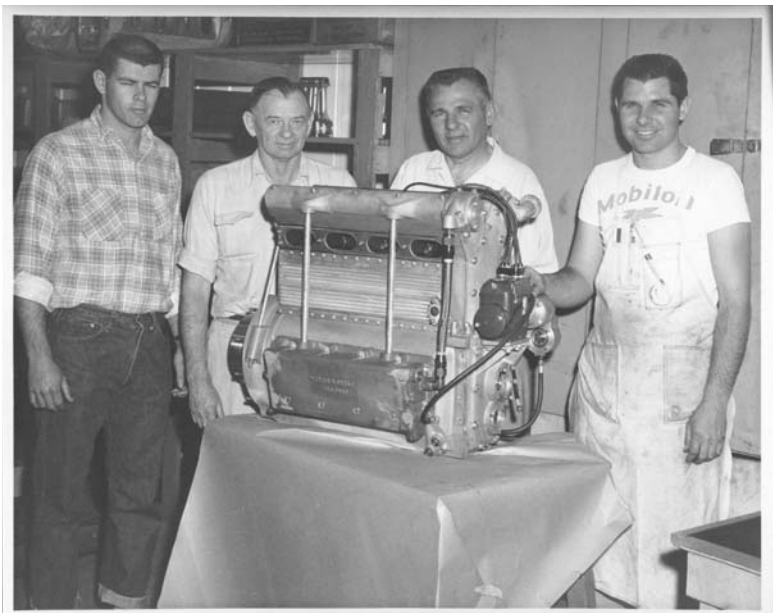


OVER HALF-MILLION COPIES THIS ISSUE



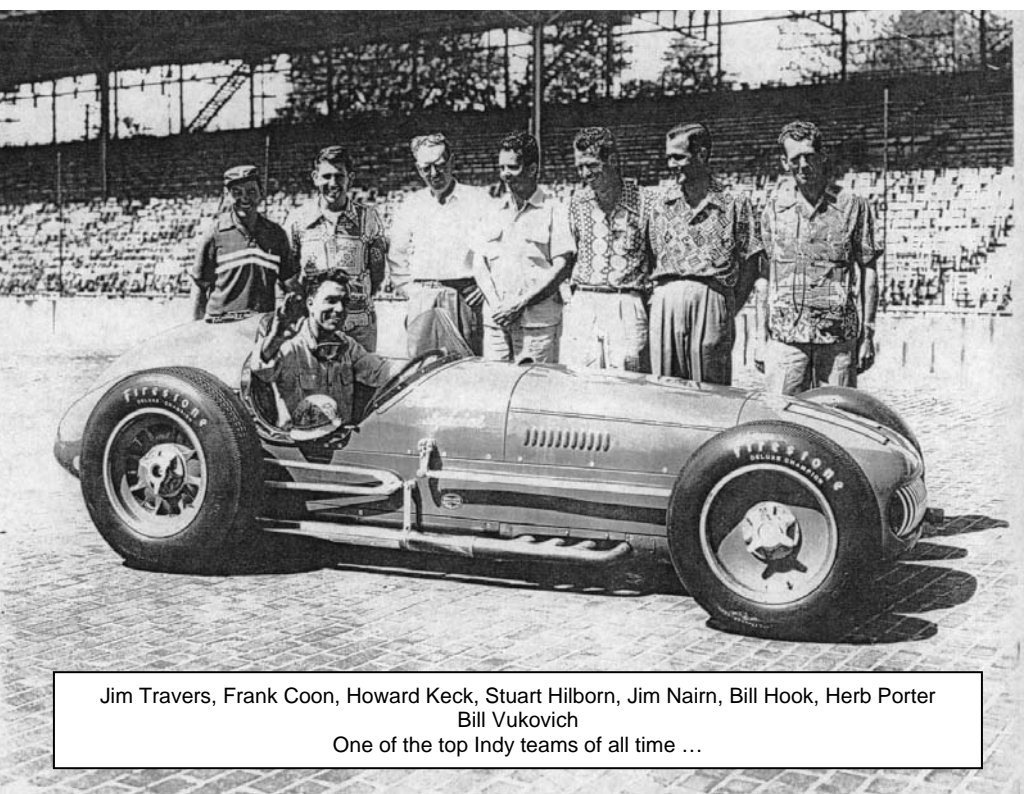


Some Offys went to sea ...



John, Dale Drake

Louie and Sonny Meyer



Jim Travers, Frank Coon, Howard Keck, Stuart Hilborn, Jim Nairn, Bill Hook, Herb Porter  
Bill Vukovich  
One of the top Indy teams of all time ...

Bob Sweikert 1955, and Pat Flaherty 1956 were Indy winners ...

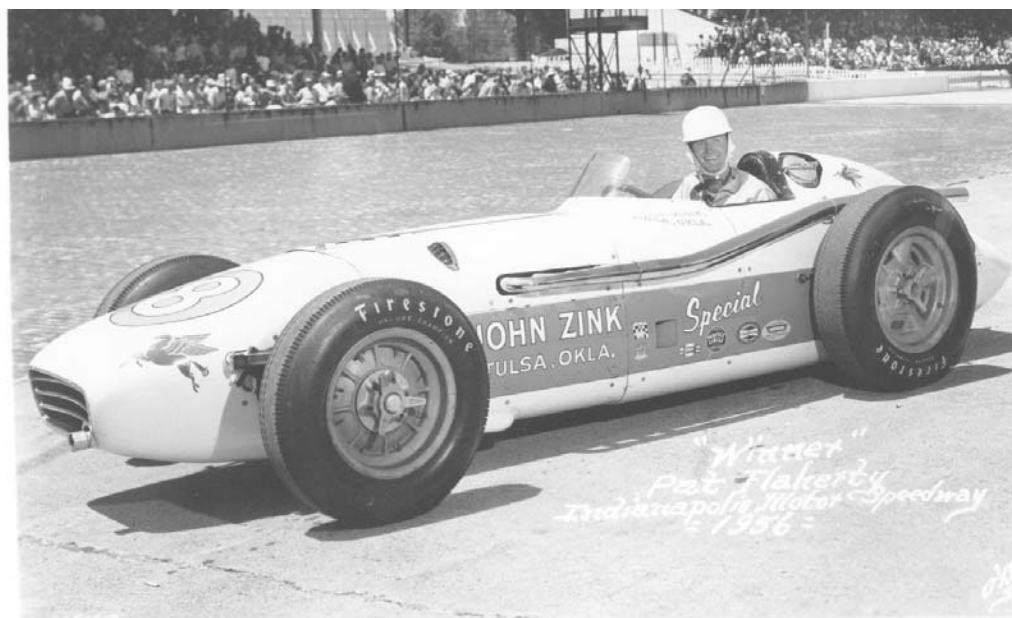


*"Winner"  
Pat Flaherty  
Indianapolis Motor Speedway  
1956*



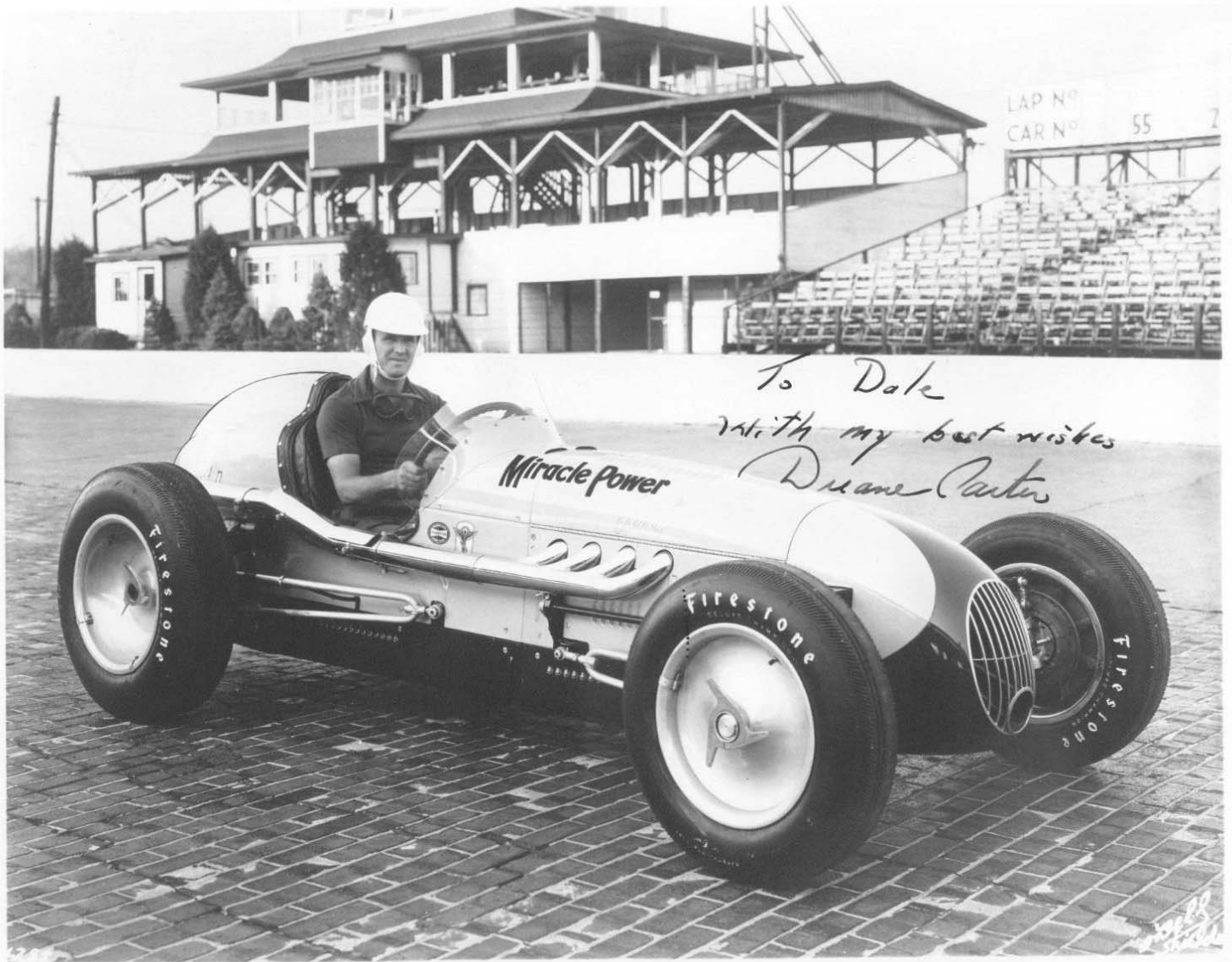
*"The Winner"  
Bob Sweikert  
Indianapolis Motor Speedway  
1955*





And they were still building the midget and sprint car engines ...



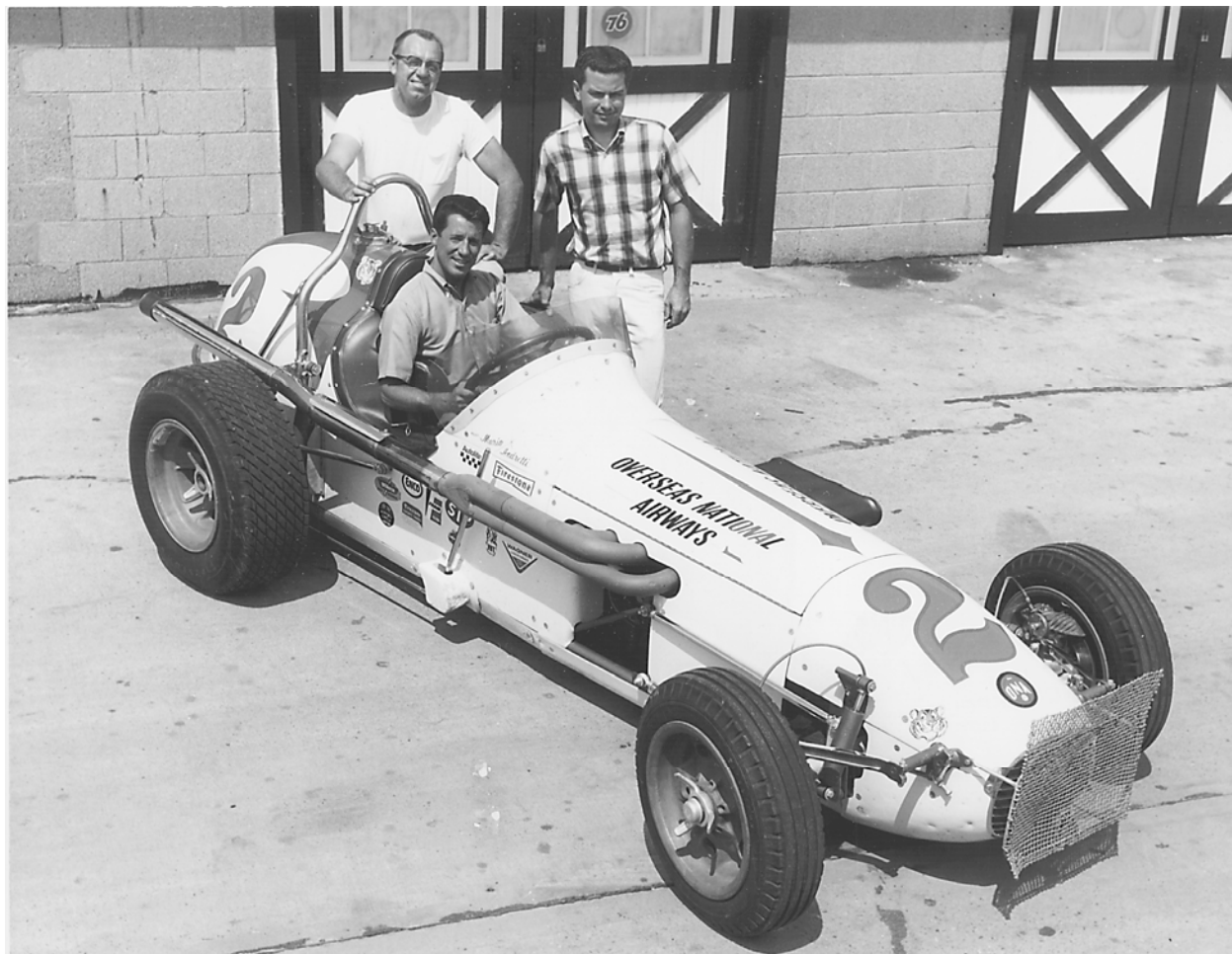
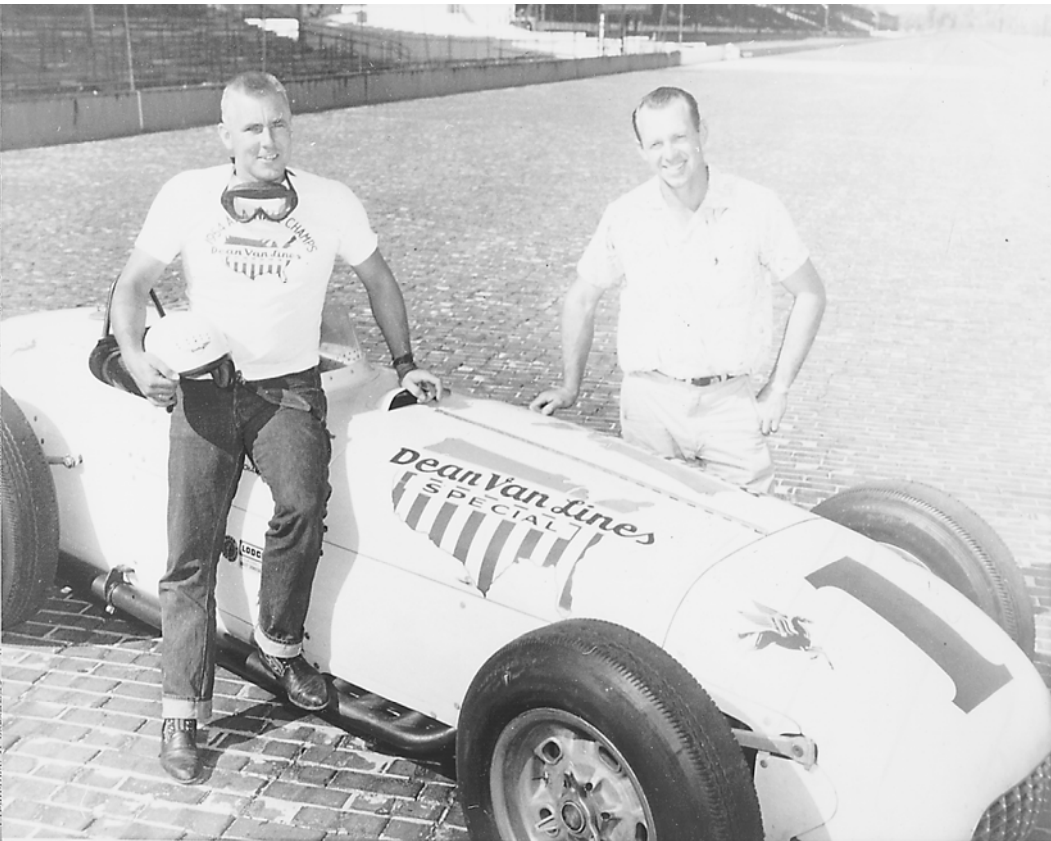


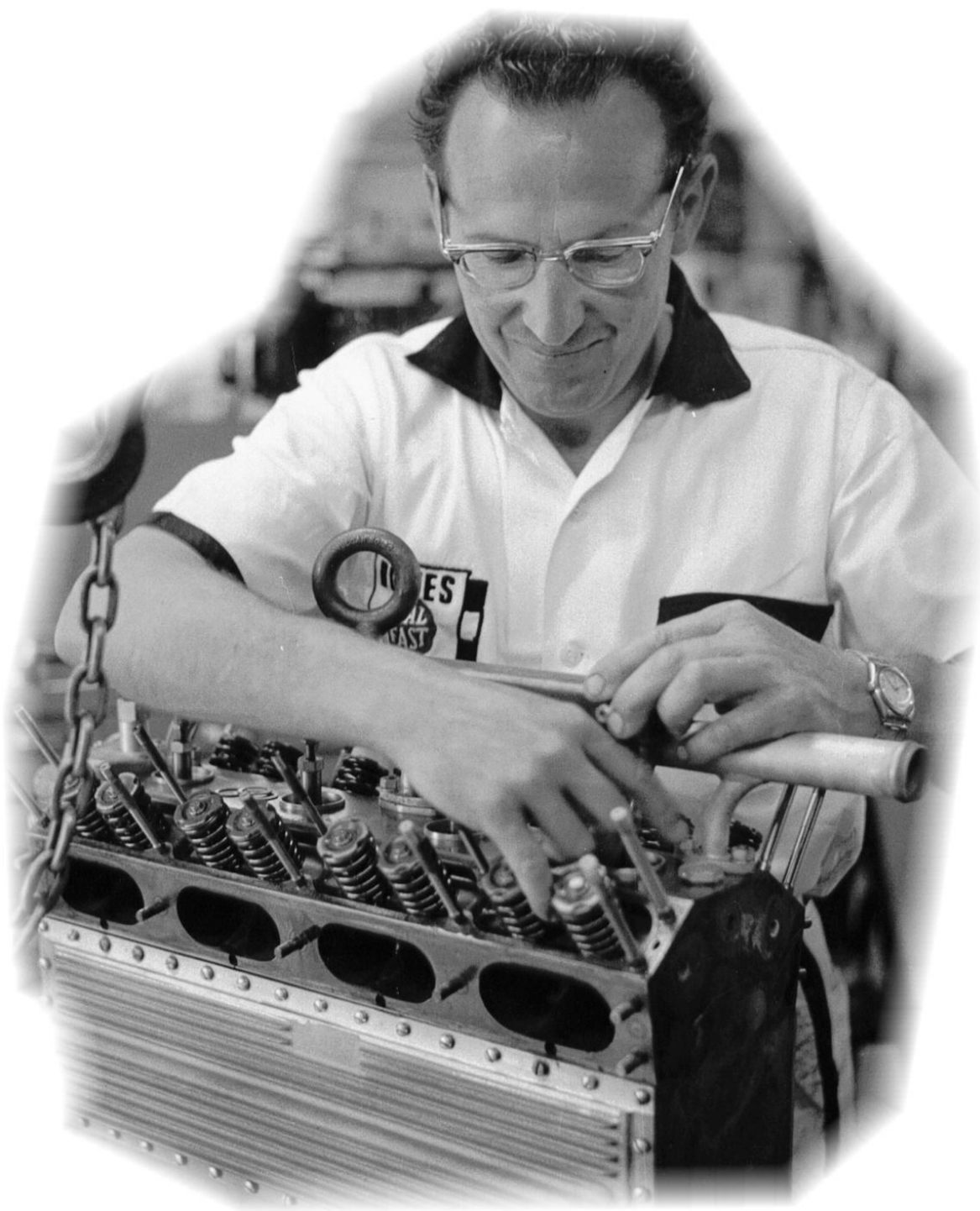


Clint Brawner was one of the top Indy mechanics. Jimmy Bryan and Mario Andretti both drove for his teams.

Above, Clint is working on an Offy ...







George Bignotti is the top Indy mechanic of all time. AJ Foyt and Al Unser were big winners for him and are shown below in sprint cars ... on the dirt. They drove everything, and won everywhere ... with Offy power!



1956

#8	John Zink	Watson/270	Pat Flaherty	Q1@145.596	WIN
----	-----------	------------	--------------	------------	-----

1957 Rules dictated engine capacity of ... 256.284 NA or 170.856 Supercharged (S/C)

#9	Belond/Salih 250/Salih(laydown)	Sam Hanks	Q13@142.812	WIN #12	Root
255	Pat O'Connor	Q1@143.948	F8 200		

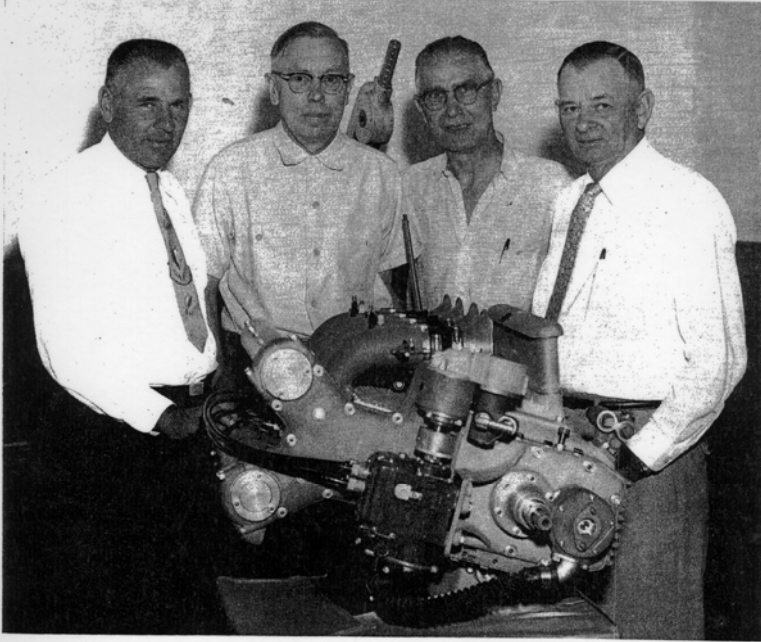


The revolutionary George Salih car sponsored by Belond Mufflers. Salih layed the engine over and got a lower hood line, weight jacked to the left, and a lower position for the driver.

Sam Hanks won at Indy with it in 1957 and Jimmy Bryan came over from the Brawner/Al Dean team and won with it in 1958.







*Louis Meyer, three-time Indianapolis winner, and Dale Drake, Builders of the Offenhauser racing engine; also Leo Goossen, Design Engineer, and Walter Sobraske, Plant Superintendent, extend their best wishes to all car owners, drivers and mechanics under guidance of the United States Auto Club.*

## MEYER & DRAKE ENGINEERING CORP.

2001 W. GAGE AVENUE

LOS ANGELES, CALIF.

- 27 -

Leo Goossen was involved with all of these cars. They were heady days of winning ... but some competition was developing overseas ... and Leo and the Drakes would make the transition to rear engines and to turbo-charging with dazzling effect ... Ford became a winner, but Drake stayed with them and survived until the next-generation Cosworth, and new restrictive engine rules finally made the Offy obsolete ...

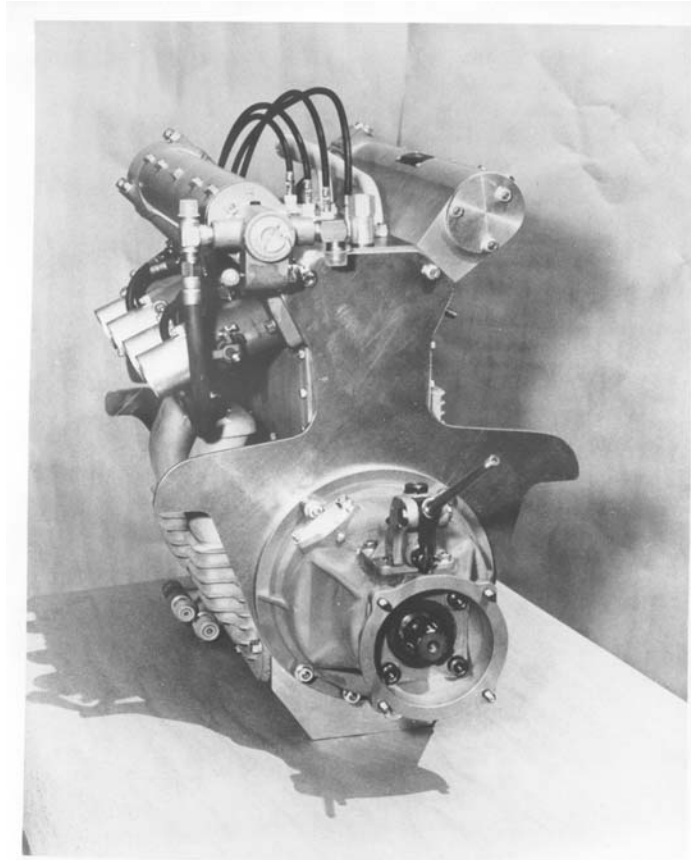
**'58 THUNDERBIRD ROAD TEST**

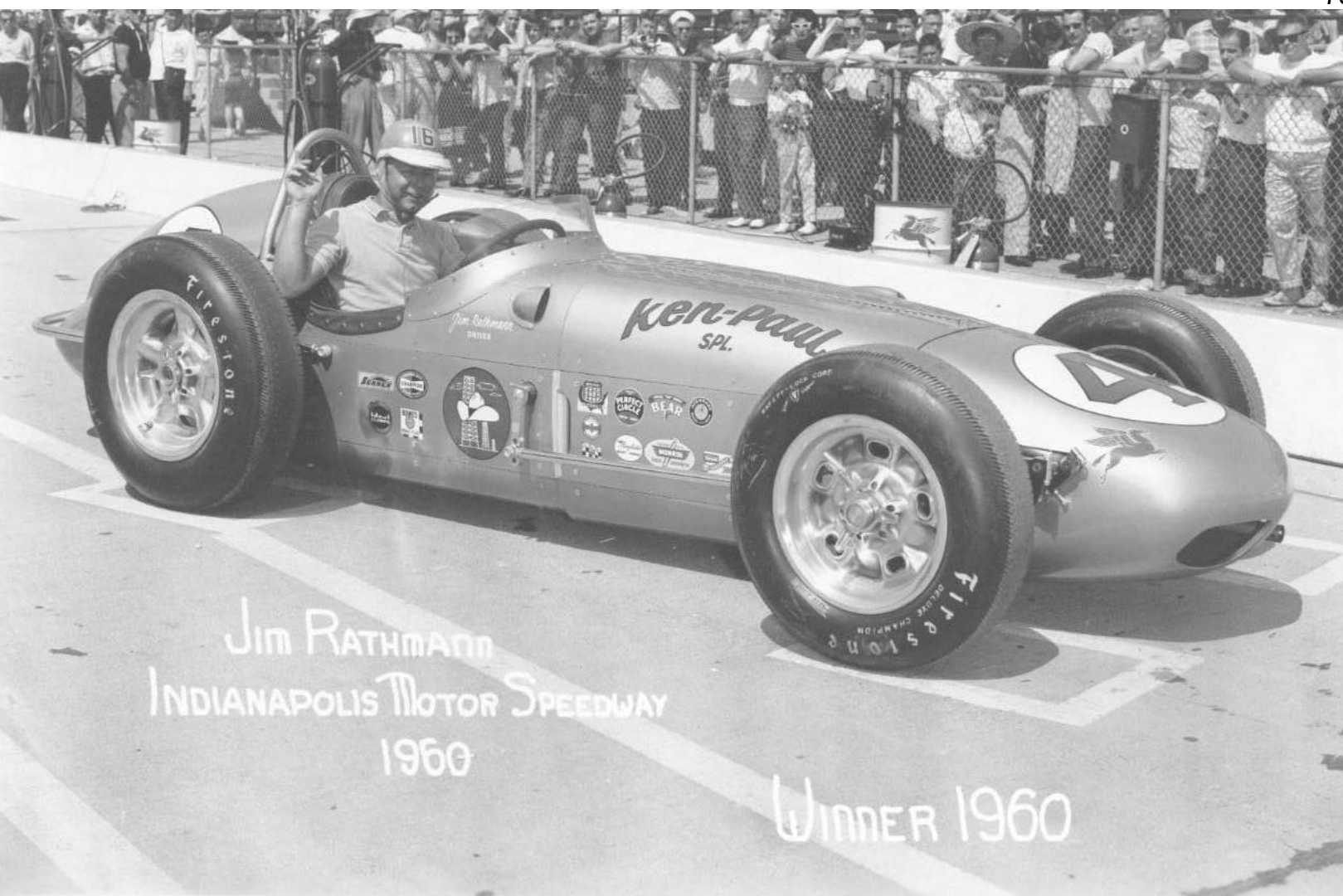
**HOT ROD**

**SHOCK ABSORBERS**  
Their effect on  
SAFETY, COMFORT  
ECONOMY  
JUNE 1958 35c

**Last-Minute PREPARATIONS For INDIANAPOLIS**

**MAMIE VAN DOREN**  
meets the CUSTOM  
**IMPALA**





JIM RATHMANN  
INDIANAPOLIS MOTOR SPEEDWAY  
1960

WINNER 1960



# '58 THUNDERBIRD ROAD TEST

# HOT ROD

## SHOCK ABSORBERS

Their effect on  
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IMPALA**





*J. C. Agajanian Presents. . . .*

# NATIONAL CHAMPIONSHIP MIDGET RACES

50-LAP MAIN EVENT — 8 RACES



CONGRATULATIONS, TONY—Managing Director J. C. Agajanian congratulates Tony Bettenhausen for his Trophy Dash victory in last midget program at Ascot Stadium. Looking on with approval are (left to right): Glen Denee, car owner, Lou Meyer, Dale Drake and Tony's son, Gary.



**NEW  
ASCOT STADIUM**

**MARCH 27, 1960**

OFFICIAL  
SOUVENIR  
PROGRAM

**50¢**

**1961**

Dan Gurney brought Ford and Colin Chapman together after seeing Jack Brabham's rear-engined car circulating easily at the Speedway in 1961. Ford and Chapman's Lotus' came to the Speedway in 1963.

RE #17 Cooper-Climax 168 (S/C)	Jack Brabham	Q13@145.144	F9 200
FE #1 Bignotti 252	AJ Foyt	Q7 @145.903	WIN
FE #12 Brawner 252	Eddie Sachs	Q1 @147.481	F2 200

**1962**

1962 efforts for Ford to buy M&D broke down.

RE #34 Mickey Thompson 256 Buick	Dan Gurney	Q8@147.886	F20 92
----------------------------------	------------	------------	--------



**1963**

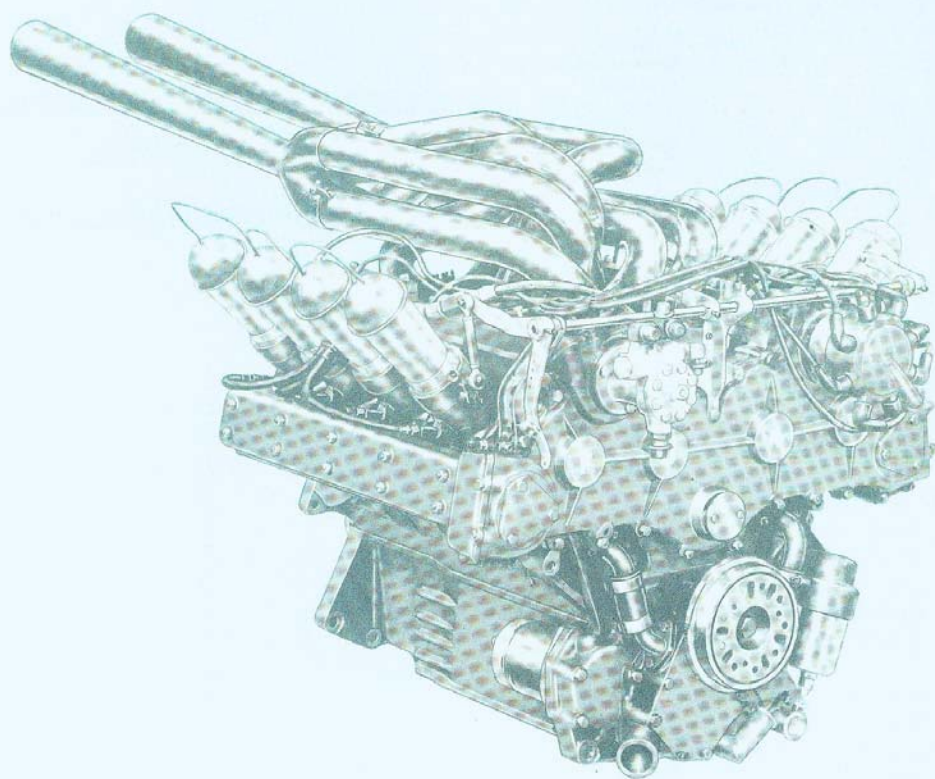
Pushrod Overhead Valve Ford V8s in rear-engined Lotus' are competitive at Indy. Ford has stock-block OHV V8s in 2<sup>nd</sup> and 3<sup>rd</sup>. Jimmy Clark wins in one at Milwaukee, their only win. M & D Offy wins 11 including Indy. Firestone brings wider, stickier tires.



FE #98 Agajanian  
RE #92 Lotus-Ford  
RE #84 Thompson  
RE #83 Thompson  
RE #93 Lotus-Ford

Watson/252 Parnelli Jones  
256 (pushrod) Jim Clark  
255 Chev Al Miller  
255 Chev Duane Carter  
256/Lotus Dan Gurney

Q1@151.153 WIN  
Q5@149.750 F2 200  
Q31@149.613 F9 200  
Q15@148.002 F23 100  
Q12 @149.019 F7 200

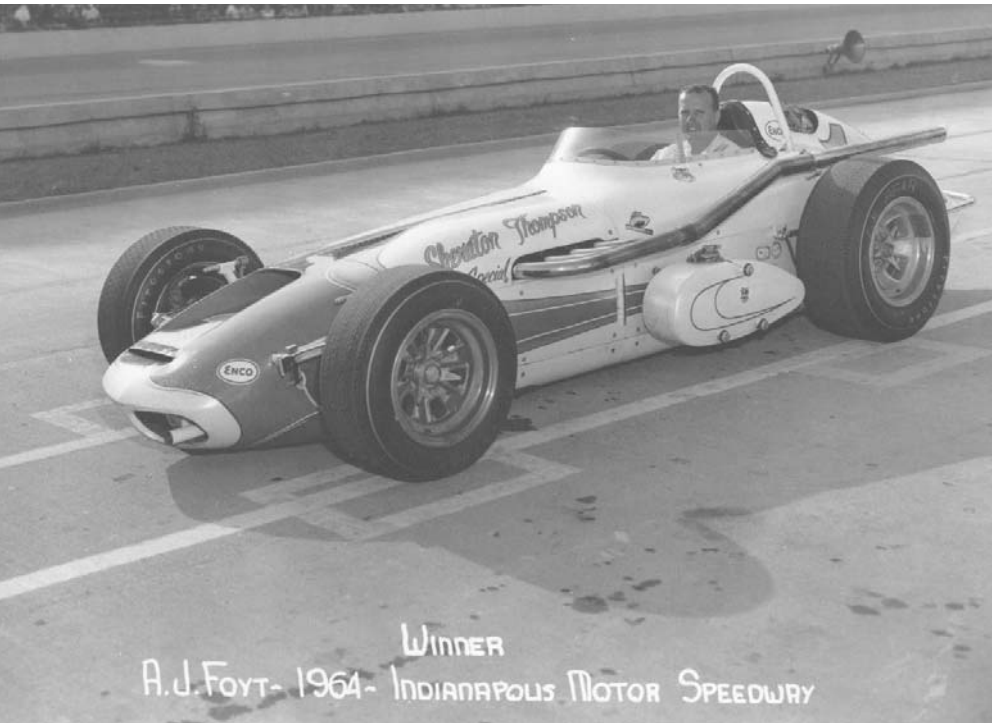


*Figure 1 – The 1965 Ford Double Overhead Cam Competition Engine*



DOHC Ford becomes more competitive with Dual Overhead Camshafts and wins two races.

Offy wins 11 including Indy. Win is last at Indy in a front engined car.



Racers see looming threat of Ford, high costs of development for Ford, leading to higher costs for racers ... with no apparent increasability for revenue



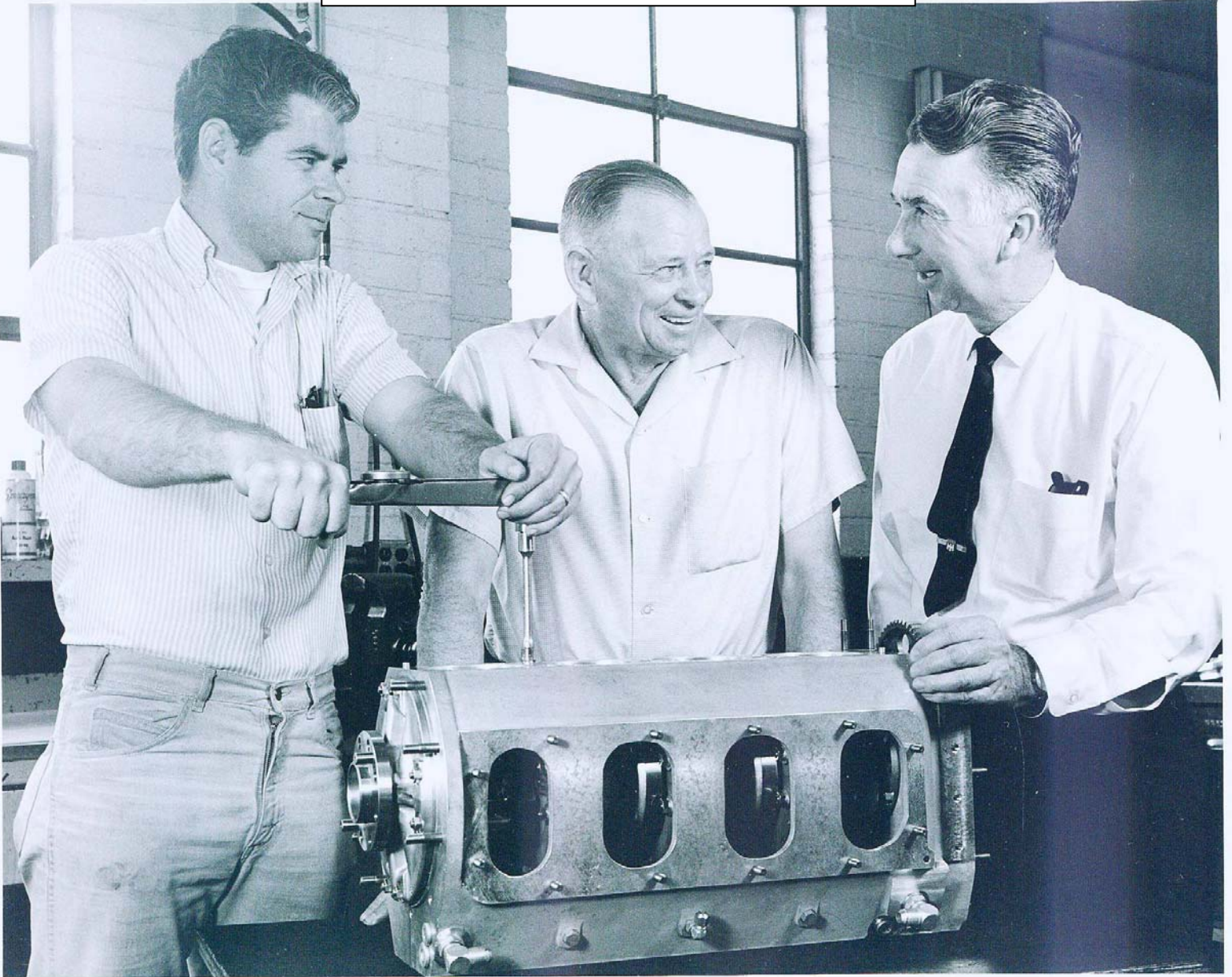
Methanol replaces gasoline

FE #1 Sheraton	Watson/Offy (methanol) AJ Foyt	Q5@154.672	WIN
RE#98 Agajanian	Watson/Offy Parnelli Jones	Q4@155.099	F23 55 RE #2 Kais-
er 255 Ford DOHC/Watson	Rodger Ward	Q3@156.406	F2 200
RE #6 Lotus-Ford	255 Ford DOHC Jim Clark	Q1@158.828	F24 47

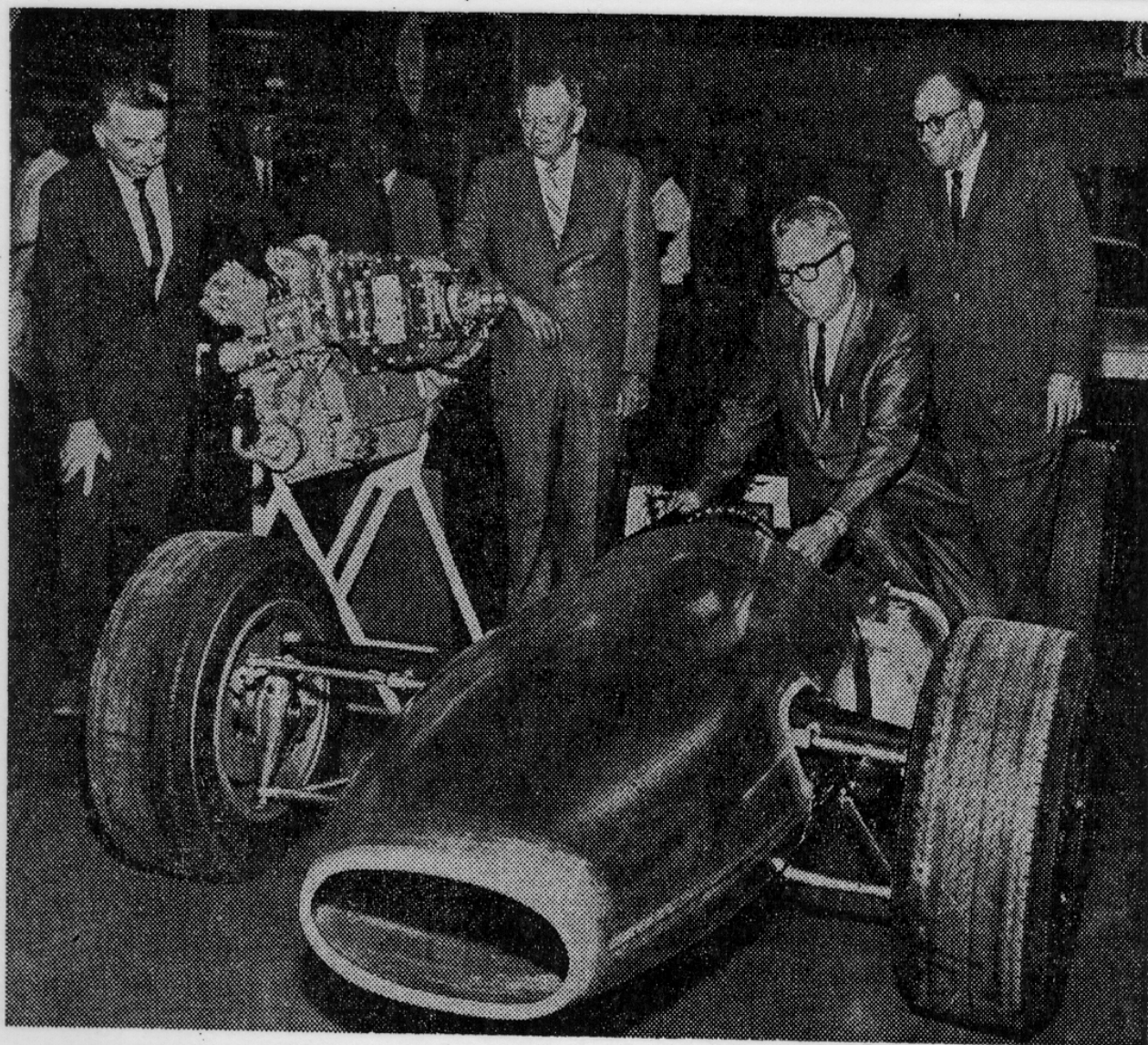
**1965**

The following data reflects the history of the Drake engine in the hands of Dale and John Drake, their team at Drake Engineering and Sales and a host of customers and suppliers ... all doing their part to extend the life of the amortized and highly developed 4-cylinder engine as it evolved from the Miller engine of the 1920s. Draftsman Leo Goossen, a 'genius' as described by Sonny Meyer and John Drake, was the lynch-pin in all of this development. He converted the concepts into the drawings which were converted, in turn, into the parts, pieces, systems, assemblies and complete racing engines for American racing teams. It was the best 4-cylinder racing engine ever built.

The Drakes were making changes. They advanced from the gear-driven supercharger to the exhaust-driven turbo-charger. They overcame the fuel delivery needs at various throttle openings. They overcame heating problems ... and materials and designs were being rapidly modified to meet the new challenges of higher speeds, temperatures and pressures from the powerful engines.



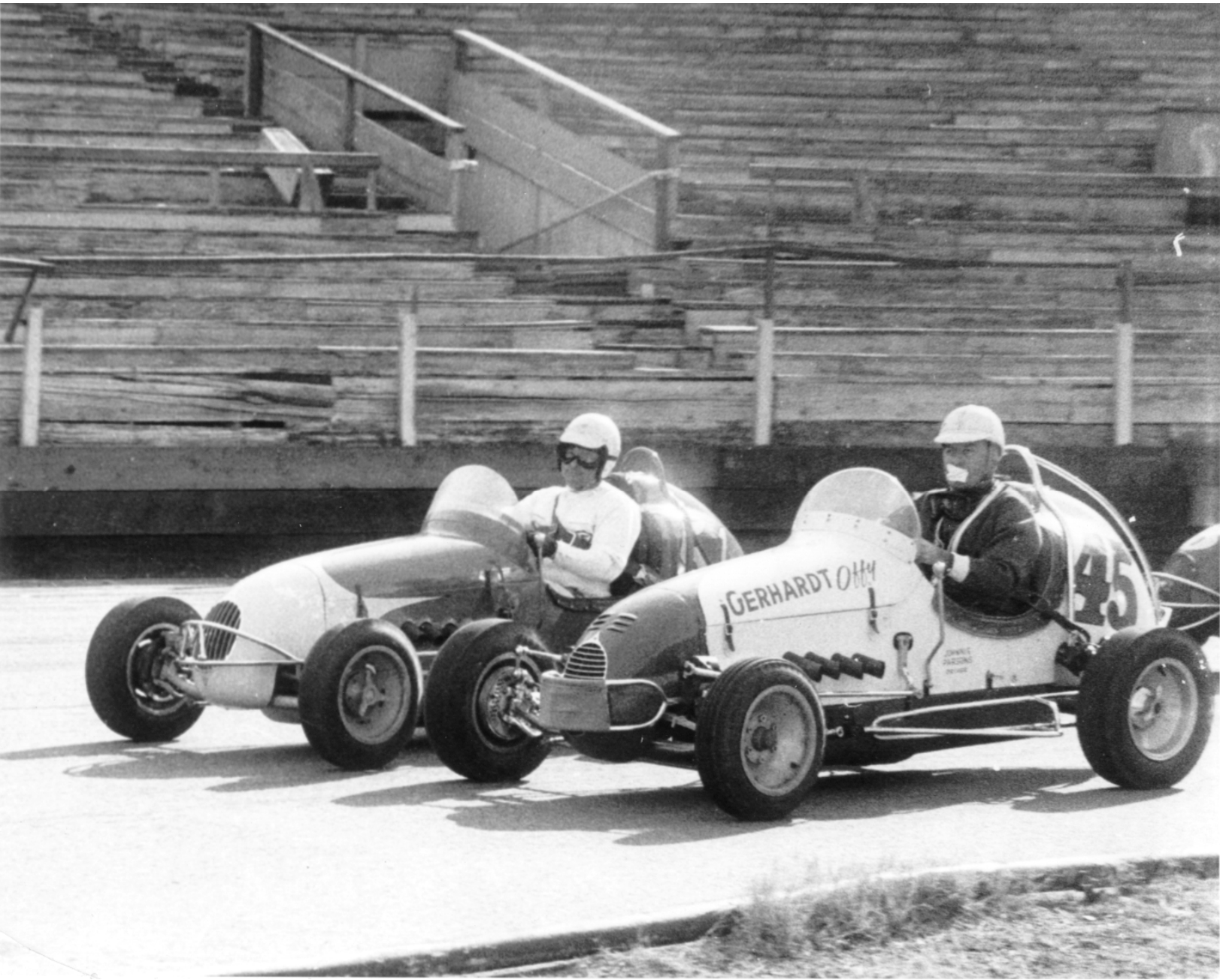




**INDY CHALLENGERS**—A new chassis, a new engine and a new owner will bid for victory in the 1966 Indianapolis 500 mile race. Myron Caves, Fresno automobile dealer and the new owner, tests the steering gear of the monocoque chassis built by Fresno Fred Gerhardt, back of Caves. On the left are Henry Banks, director of competition for the United States Automobile Club, and Dale Drake of Los Angeles, checking Drake's new power plant. Drake's Offy engine, with supercharger, is expected to challenge the Fords which dominated this year's Indy race. The engine weighs about 425 pounds and will develop about 525 horsepower at 8,500 r.p.m. Caves said Rodger Ward probably will be the driver in the first competitive outing, the 200-mile Phoenix race next month.

Racers demanded the best that could be produced and Leo and the Drakes did that. Their legacy still provides a nexus for a revival of their 4-cylinder racing engine. I am told it could be built to produce 240 miles per hour in a modern racing car!







The Gerhardt shop in Fresno ... Fred in dark suit and tie ...



Fred Gerhardt Dale Drake Henry Banks Myron Caves ... at the Caves Buick dealership in Fresno ... 1966





Bill Vukovich??? In Gerhardt midget.





# FAIRLANE'S 390-INCH GT/A

MARCH 1966 50c

UK 3'6 Swedged KR 3.90 Inkl. onrs

# HOT ROD

EVERYBODY'S AUTO MAGAZINE

**INSTANT "FUNNY CAR"**

**SWAP: 396/CHEVY II**

**A FAST-DRAW 4-SPEED**

**HRM TOP TEN 1/4-MILERS**

**FIRST TEST: BSA 441**

**AUTO SHOP SERIES...**

**"HOT CAMS"**



**DRAKE'S NEW OFFY!  
THE KING IS BACK  
WITH SHORT STROKE,  
BLOWER AND 525 HP!**



Dale Drake with supercharged  
Offy ... may be Rodger Ward's  
winner at Trenton ...



M & D engines win 9 races in 1965 ... Ford won 9, including Indy.



Lou Meyer sold to Dale Drake in July of 1965 and took over the Ford racing engine assembly, sales and service.

Gordon Van Liew and others could see that the Ford would beat the Offy and that supercharging the Offy was necessary to be competitive.

Dan Jones takes the engine program out of the Ford plant. How did they do it? New patterns? New Foundry? Kar-Kraft? George Salih doing machining work? Was Salih a Meyer & Drake employee at the time? When did Louis Meyer Inc. start assembling engines?

31 May ... Indianapolis 500 ... Jimmy Clark wins in rear-engined Lotus-Ford followed by Parnelli Jones, Mario Andretti (Hawk-Ford) and Al Miller in their Lotus-Fords. Billy Foster was fastest Offy qualifier at 158.416. Ford engines won all but one of the rest of the paved races. Some may have had Hilborn fuel injection systems.

Gordon VanLiew brings the #44 Vita-Fresh car to the Speedway with a belt-driven supercharged Offy. Gordon wanted to compete with and beat the Fords. Their team had devised a belt-driven GMC Roots-type, positive displacement blower for their Offy. Dempsey Wilson drove the #44 Edmunds rear-engined car, but DNQ.

M & D may have built a 168 cid engine for him in late 1964 or early 1965. (check build sheets) ... may have been a reduced 220 cid engine.

Louis Meyer sent Dale Drake a 'buy-sell' letter. Dale talked it over with wife Eve, and elected to buy Meyer out effective July 1st. He formed Drake Engineering and Sales Corporation. Their first change was to create a short-stroke engine, assembled by John Drake. The build sheets are missing for the engines built after the short stroke

July 8 ... build sheet for 255 short block (5/8") cast iron. Engine no. 'EXP'. 4 1/2" bore x 3 15/16" stroke, compression ratio 14:1, crankshaft no. 10767, 7" rod centers, forged true pistons, 1/16" off set pin.

Champion Spark Plug's Dick Jones was developing a Roots belt-driven supercharger on a 220 cid Offy engine (#187) borrowed from Vince Conze.

Around the same time Drake's had Goossen design a 168 cid engine with a bell housing to mount a Roots-type blower to be driven by a gear in front of the flywheel. Goossen drafts 168 cid (4.125" x 3.125") engine for blower, having stronger crankshaft

Also, near that time, Bob DeBisschop of Garrett AiResearch, who had worked on AJ Watson's pit crew, approached Watson about developing a turbocharged Offy. AJ declined, and DeBisschop went to Herb Porter, who was known for his supercharger development, and asked him to take on the development of the turbocharger. Porter agreed 'but only if Hilborn can make a fuel injector that will work with it'. They met with Garrett VP Wilton Parker, and formed an agreement for AiResearch to supply a few turbos and parts for testing.

In November Drakes were going to test with a 525 horsepower Roots blown 168 cid engine at Phoenix, unsuccessfully. (price \$15,000???) Also, they tested the short-stroke 255 cid engine which apparently ran at record speeds.

Porter borrowed an engine from Vince Conze and mounted the AiResearch TEO-6-59 turbo and wastegate on Hilborn's intake/exhaust manifold. They ran it on the Champion dyno on December 16<sup>th</sup>, 1965. It showed almost 575 horsepower at 6,500 rpm This was more than 100 horsepower more than Drake and Champion were getting with the Roots blower at similar rpm. At higher rpm the turbo would be even better. Dale Drake was present, and allegedly said, 'that's the end of the Roots project'.

Porter got Goossen to take out the blower gear drive on a Drake 168 cid engine and put a turbocharger on it for a Watson car owned by his friend, Ebb Rose. They tested at the Speedway, and then at Phoenix in April of 1966, where AJ Foyt and John Poulsen and Don Branson drove it. Back again at Indy Bobby Grim took a test drive and said that he wanted to drive it in the 500. He qualified in the old car with a new engine, but was eliminated in a first-lap crash with 10 other cars.

Porter and Hilborn carried out extensive development to match fuel/air delivery at various throttle openings. They improved the lube feed and cooling of the newly-stressed engine. (See Stuart Hilborn's monograph containing his memoirs) (Also see Dick Jones of Champion's monograph). Ken Walton has written in detail on this era in his book *Offy, America's Greatest Racing Engine*.





Bobby Grim  
With Herb Porter's AiResearch turbo set-up  
Indy 1966

Fred Gerhardt was an old friend of the Drakes. Some of Fred's cars and his drivers are shown here.

The first Gerhardt champ cars were built for the supercharged Drake. It looked like a winner but the turbochargers soon took over and Gerhardt phased into them.









Dyno sheet in Walton's book shows 183 on test. Herb had a lot of experience with blowers, and Stuart with fueling. It seems reasonable that AiResearch would start with them, and later go to Jones with his Champion dyno for development work, while still working with Herb and Stuart on track and on the flow bench. Later Dick took over more and more of this development, with his sub-rosa arrangement with Parnelli Jones in a new company (R&D). Dick told me that Champion was not happy about this but went along with it anyway.

#82 Lotus	Ford/Lotus	Jim Clark	Q2@160.729	WIN 200
(16 other Fords in the race)				
Billy Foster was top Offy qualifier (and only one in top ten)			Q6@158.416	DNF

Gordon Johncock 5<sup>th</sup>, Mickey Rupp 6<sup>th</sup> and Eddie Johnson were in the top ten with their Offys

## THE DRAKE TRACK RECORD

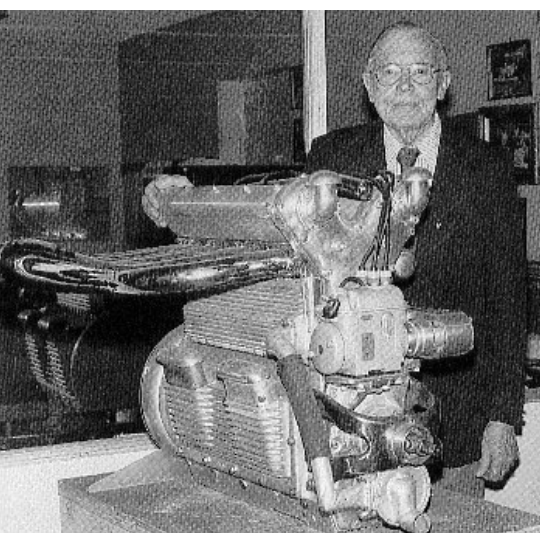
**1966**

**Drake 5 wins**--there may have been some old M&Ds in the winners. The records are not clear. Ford won 10, including Indy ...



Beginning in 1966 all the new 'Offy' engines were built by Drake Engineering. Some older Meyer & Drake Offys still competed and they continued to win a few races, mainly in the hands of Mario Andretti, on the dirt, up until 1969.

The Ford empire was pulling out all the stops to make their engine 'racy'. Hans Tanner's fine book, *The Racing Fords* describes the many, many changes made. Each change meant that something else had to be changed ... and so on. They were successful at Indy in 1965, 1966 and 1967.



Leo Goossen and his engine ...

IndyCar 1992 Media Guide shows 'Drake-Offy' engines winners beginning in 1966. First win was a (gear-driven?) supercharged Drake-Offy fielded by George Bignotti and driven by Rodger Ward at Trenton on 24 April.

Herb Porter had a turbo for Bobby Grim, Van Liew had a turbo for Bobby Unser and Jim Hurtubise had a Drake turbo in his Gerhardt. Three others had Drake gear-drive superchargers (believe these had porous aluminum blocks). Ford swept the first four places.



Lloyd Ruby won at Phoenix on 9 April, 1967 for the first turbocharged Drake-Offy win.



Drake offered first a gear-driven roots-type supercharger, then an AiResearch turbocharged engine, and kits to retrofit supercharged Drake-Offys with the turbocharger.

January 29-30 ... Parnelli Jones tests supercharged Gerhardt-Drake at Phoenix and sets track record at 123.49, eclipsing Mario Andretti's record of the previous year in a Ford. The engine could be sold for \$12,000 according to Gordon White, author of *Offenhauser*. The naturally aspirated engine selling for around \$10,000.

The 252 was being pushed to over 7,000 rpm, breaking rod-bolts, block-crankcase bolts, crankshafts. Drakes build their first 251 cid short-stroke (4.5" x 3.9375") 470 hp @ 7,800 rpm engine for Gerhardt, and Morales, and built seventeen of the 168 engines with gear-driven superchargers. Some of these aluminum blocks were poorly cast and porous. Greater heat from turbocharging and different expansion rates between the aluminum and the other metals in the valves, piston, sleeves etc. also caused problems.

March 20, 1966 ... Phoenix 150 ... Jim McElreath wins in Brabham-Ford, followed by Rodger Ward in #24 supercharged Lola-Drake/Offy, and Hulse and Tinglestad in their front-engined Drake/Offys. Possibly, these Offys were built prior to July 1965 by Meyer & Drake. There were six Gerhardt cars in the race. Fred Gerhardt was an old friend of the Drakes from their Reedley/Fresno days. They did a lot of development together. Myron Caves, a local Buick dealer was one of the sponsors of Gerhardt cars.

April 24 ... Trenton 102 (rain) ... **Ward wins in his #24 supercharged Lola-Drake**, followed by Gordon Johncock in his Gerhardt-Drake/Offy. Most of the rest of the field was in Offys. Apparently, none were supercharged or turbocharged.



May 30 ... Indianapolis 500 ... Graham Hill wins in Lola-Ford, Mel Kenyon was fifth in his Gerhardt-251 Offy, followed by a scattered field of Offys ... Bobby Unser, Hurtubise (Gerhardt), and Grim in the three turbocharged cars, and Parnelli Jones, Ward, and Tinglestad (Gerhardt) in the three supercharged Offys. It was a development year. Fred Gerhardt ran three cars, a 251 unblown engine, one turbocharger and one of the gear-driven superchargers. There is some confusion about Unser's engine. The Van Liew/Vita-Fresh team had two cars. One, driven by Chuck Stevenson DNQ, the other apparently had the turbo which Bobby drove. Phil Harms shows it the other way around. The 17 aluminum blocks proved porous and caused problems.



The top Drake qualifier was Parnelli Jones (4<sup>th</sup>) at 162.484, finishing 14<sup>th</sup> in a supercharged Shrike. In 1965 Billy Foster was the fastest Offy qualifier (6<sup>th</sup>) at 158.416.

Six Gerhardts qualified, six did not. Offy 168s show up, (with superchargers and turbochargers) Bobby Unser qualified in Van Liew's supercharged #7 car but raced the #11 turbocharged car???)

Herb Porter has Bobby Grim in turbocharged #39 (T/C) car

Jim Hurtubise was in Fred Gerhardt's T/C car. Gerhardt and Drakes were old friends. And there were four Drake S/C cars, one, another Gerhardt.



#24 Mecom Ford/Lola Graham Hill  
Drake/SC/Shrike

Q15@159.243  
Q4@162.484

WIN 200 #98 Agajanian  
F14

Mel Kenyon was 5<sup>th</sup> in a Drake251/Gerhardt  
Eddie Johnson was 7<sup>th</sup> in a Drake251/Huffaker  
Bobby Unser was 7<sup>th</sup> in VanLiew's turboDrake

June 5 ... Milwaukee 100 ... Mario Andretti wins in Hawk-Ford. Art Pollard was 4<sup>th</sup> in a supercharged Gerhardt-Drake, Mel Kenyon being being 7<sup>th</sup> in another Gerhardt-Drake, followed by Bobby Grim in the old Watson, and, maybe, a turbocharged Drake, then Gary Congdon in Huffaker-Drake. Four other supercharged Drakes were in the race. It is possible that some were turbocharged but it is more likely that it was thought that the turbochargers would not spool up quickly enough on the one-mile track.

June 12 ... Langhorne 100 ... Mario won again, and Ford dominated the top spots, Again, there were apparently no supercharged Drakes in the field.

July 24 ... Indianapolis 150 road course (Raceway Park?) ... Mario won again. Again, Ford dominated.

August 7 ... Langhorne 150 ... Roger McCluskey won in an Eagle-Ford. Offys were prominent, but Ford was dominant, although somewhat less than in previous races. The supercharged Offys were competitive and reliable.

August 20 ... Springfield 100 dirt ... **Don Branson won in a Watson-Drake.** No Fords appeared, apparently leaving the dirt track to unblown Drakes, as did the Gerhardts.

August 27 ... Milwaukee 200 ... Mario won again. Ford took top five positions, thereafter, Drakes were prominent, seven of them being supercharged.

September 5 ... DuQuoin dirt 100 ... **Bud Tinglestad won in a Meskowski-Drake.** Ford did not appear.

September 10 ... Indianapolis 100 dirt ... **Mario won in a Kuzma-Offy.** No Ford, no Gerhardts.

September 25 ... Trenton 200 ... Mario won, back in his Hawk Ford. The Drake engines were prominent and competitive.

October 9 ... Fuji road course 200 (non-championship) ... Jackie Stewart wins in Lola-Ford. Bobby Grim drove Herb Porter's front-engined, turbocharged, Watson-Drake into 8<sup>th</sup> place, while Ronnie Duman Gordon Van Liew's Vita-Fresh turbocharged Huffaker-Drake. Apparently this was the first appearance of the turbocharged engines after Indy.

October 23 ... Sacramento 100 dirt ... **Dick Atkins, who had been keeping his Agajanian/Watson-Drake in the hunt, won this one.** Fords and Gerhardts did not appear.

November 20 ... Phoenix 200 ... Mario won again in the Hawk-Ford ... the Drakes were there, but down in the field



1967

**Drake 5 wins**--there may have been some old M&Ds, the records are not clear. Ford won 15 including Indy.

## Winning Phoenix in Turbocharged Offy

By RONNIE ALLYN

PHOENIX, Ariz.—Lloyd Ruby, driving the brand new Gene White Turbo-charged Offy, scored a runaway win in Sunday afternoon's Jimmy Bryan 150-mile USAC National Championship car season opener at the Phoenix International Raceway before some 14,000 sun baked fans.

### THIRD CAREER VICTORY

It was the first win for the 39-year-old Texan on the Championship Trail since his victory in the 1964 200-mile race at PIR, and third championship win of his career.

The win was worth almost \$8,000 in accessory, lap and prize money. Promoter J. C. Agajanian paid out a \$20,095 purse for the day's racing on the one mile paved oval.

Placing second was Art Pollard, but following the race he was given a four lap penalty by USAC officials, for not pulling in for a black flag early in the race. This put him back to seventh. He pulled in after several laps, and was allowed to re-enter after the car was checked for an oil leak.

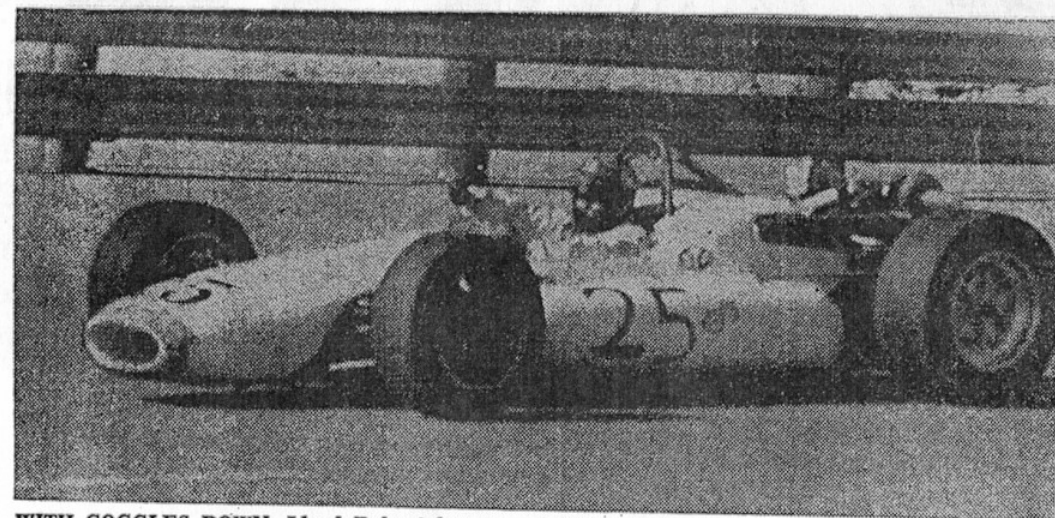
Roger McCluskey, in the G. C. Murphy Ford-Eagle, was awarded second, with Gordon Johncock in his own Ford third. Fourth went to Joe Leonard in the Sheraton Thompson Ford, with his boss A. J. Foyt fifth in a second Sheraton-Thompson Ford. Sixth went to Greg Weld in the Harrison rear-engine Chevy, with Pollard seventh in the Gerhardt super-charged Offy. Eighth went to Arnie Knepper in the D.V.S. Ford, followed by Lothar Motschenbacher in the Ken Brenn rear-engine Offy, and Mel Kenyon in the second Gerhardt super-charged Offy. The time for the 150 miler was 1:44:17.60.

### SETS LAP MARK

Ruby sat on the pole for the race with a new one lap track record of 29.43 seconds to erase Mario Andretti's former mark of 29.47 set last November.

He then proceeded to jump into the lead on the drop of starter Shim Malone's green flag, with Al Unser in second and Pollard third.

The first 50 laps went like clockwork, with no problems at all. Then Larry Dickson spun on the first turn, and crashed into Bobby Unser. Unser's car slammed into the outside guard rail while Dickson bounced into the infield where his car burst into flames. Dickson bailed out as soon as the car stopped, but still managed to receive burns on his heel, hands and a flash burn on his face. They were described by doctors as not serious. Unser was uninjured, despite the fact that both cars were badly wrecked.



WITH GOGGLES DOWN, Lloyd Ruby takes a cool-off lap before bringing his new Dave Laycock built Gene White turbo-charged Offy into the winner's circle after Sunday's Jimmy Bryan Memorial at Phoenix International Raceway.

(Earl Garretson photo)

First Drake - turbo win -  
Gerhardt had Pollard in their  
Drake - turbo to 7th place - ran  
strong, but was penalized -

Leo designed more bulk into the exhaust area of the Drake block allowing for more coolant capacity and made other improvements to help absorb the greater heat being produced at the full potential of the engine. Porter, contracted to Goodyear Tire, continued the on-track testing and development of the T/C. Turner Foundry in Bell, California was now casting acceptable aluminum parts for Drake.



Stuart Hilborn was also working with Dick Jones, improving the fuel and air flows, making the engine more reliable and responsive. Hilborn produced both the exhaust and intake and fuel injection systems as a 'bolt-on' kit. This now included a secondary injector in the intake. Everybody was working to improve the Offys power and response at all throttle openings, at all engine speeds and conditions. It was not simple, and much trial and error work was done, at the flow bench, on the dyno and on the track.



Joe Hunt modified his magnetos to operate in the new, and hotter environment, exacerbated by the vibration of the higher engine speeds ...now approaching 9,000 rpm.

Ford, a Firestone user, could no doubt see all of the development going on, and began working on a turbocharger for the 1968 campaign, the first one showing up at Trenton 21 April, and their only When and how did Ford make decision to go to the 170 TC engine? How was the changeover accomplished? Are there notes or dyno readouts showing the various iterations and the resulting HP, torque, fuel consumption? Schwitzer involvement? Bendix, Elmer Haase involvement?

In 1965 Louie, with his son, **LOUIS MEYER II (SONNY)** had decided to join the Ford race team. George worked with them in developing the Ford engine.



Sonny Meyer, George Bignotti  
Ford DOHC with Schwitzer turbocharger  
on the dyno  
1967

Meanwhile, **DALE and JOHN DRAKE**, with **DICK JONES** of Champion Spark-Plug were working just as hard to continue the development of the Drake-Offy. Dick was a key factor in making the supercharger, then the turbo-charger, successfully boost engine power and make it competitive once again. When he did that, Lou and the others on the Ford team had to develop their own turbocharger. **FRED GERHARDT** an old friend of the Drakes from Fresno built the first car for a supercharged Drake, then others for the turbocharged Drakes.

**DICK JONES,  
Champion engine builder ...**



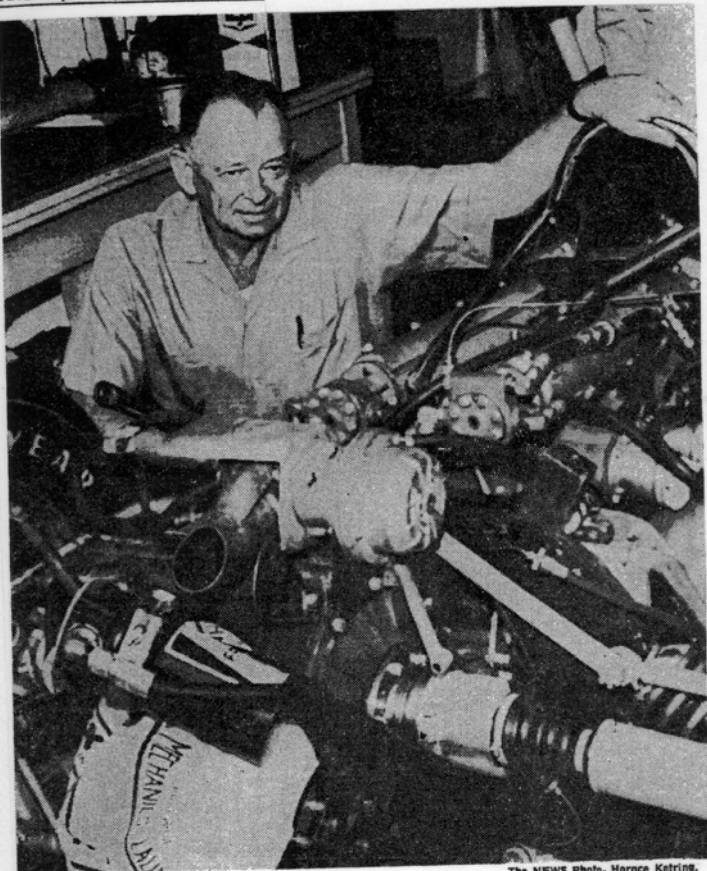
**DICK JONES  
of Champion Spark Plug  
"all I ever wanted to do was build  
engines"**



By Kenneth L. Berg©  
 The Motorsports Education Foundation  
 A non-profit society  
 Mesa, Arizona and Cranbrook, B.C.



Saturday, May 28, 1966



The NEWS Photo, Horace Ketring.

Supercharged Dale Drake bounces back into racing.

Dale Drake with AiResearch turbo on Drake-Offy  
 1966

April 9, 1967 ... Phoenix 150 ... **Lloyd Ruby qualifies first and wins in Gene White's turbocharged Mongoose-Drake**, followed home by four Fords and a gaggle of Fords and Offys, some of the latter supercharged.

April 23 ... Trenton 150 ... Mario wins in the Hawk-Ford. Two turbo-Drakes are in the field. Ruby qualified 2<sup>nd</sup> in his Gerhardt, and Pollard 3<sup>rd</sup> in his Mongoose.

May 30 ... Indianapolis 500 ... AJ Foyt wins in his Coyote-Ford.

#14 Sheraton Coyote/Ford AJ Foyt

Q4 @ 166.289

WON 200

Lloyd Ruby Q7 at 165.229 in the Mongoose-Drake TC

There was only one gear driven supercharged (S/C) Drake engine in the field, the other seven Drakes had turbos. Many are in Gerhardt cars. Some were converted from S/C. Top Drake finishes: Hulse 7<sup>th</sup>, Pollard 8<sup>th</sup> in a Gerhardt car, Veith 11<sup>th</sup> Gerhardt



June 4 ... Milwaukee 150 ... Johncock wins in Gerhardt-Ford. Seven turbo Drakes are in the field and qualify well.

June 18 ... Langhorne 100 ... Ruby wins in Mongoose-Ford. Ford dominates the race.

July 1 ... Mosport road 100 (2 races) ... Fords dominate. No turbo Drakes ... four are supercharged.

July 23 ... Indianapolis road 150 ... Fords dominate. Three supercharged Drakes in field.

July 30 ... Langhorne 150 ... Ford dominates. Four supercharged Drakes in field.

August 6 ... San Jovite road 100 2 races ... Ford dominates.

August 19 ... Springfield dirt 100 ... Drake dominates ... **Foyt wins in Meskowski-Drake** ... no turbos, no superchargers.

August 20 ... Milwaukee 200 ... Ford dominates.

September 4 ... Du Quoin dirt 100 ... Drake dominates ... **Foyt wins in Meskowski-Drake** ... no turbos, no superchargers.

September 9 ... Indianapolis dirt 100 ... Drake dominates ... **Mario wins in Kuzma-Drake** ... no turbos, no superchargers.

September 24 ... Trenton 200 ... Ford dominates.

October 1 ... Sacramento dirt 100 ... Drake dominates ... **Foyt wins in Meskowski-Drake**

October 22 ... Hanford 200 ... Johncock win in Gerhardt-Ford. Drake is competitive. Most of the Drakes are Gerhardts.

November 19 ... Phoenix 200 ... Mario wins in Hawk-Ford. Drakes are competitive.

November 26 ... Riverside 300 ... Dan Gurney wins in Eagle-Ford. Ford dominates.

Lou retired in 1969. The Ford engine program went to AJ Foyt. George and Sonny worked with Drake Engineering continuing the development of the Drake-Offy engines to compete with Ford (US) and then Ford-Cosworth (UK).

Bignotti worked with oil-man/sponsor **PAT PATRICK** during the 1970s and was instrumental, along with **ART SPARKS**, in developing the narrow valve-angle Drake-Offys and putting them into Patrick-funded and **BOB RILEY**-developed Wildcat race-cars.



Gordon Johncock (?) on left, Wally Dallenbach in car, Pat Patrick in dark suit to the right  
George Bignotti on the tire  
ca 1975

Driver **GORDON JOHNCOCK** was notably successful in this combination.

**JIM MC GEE** worked initially on their Dean Van Lines Offys with Clint Brawner. They, along with George Bignotti are the top chief mechanics of all time, by a wide margin. **JIMMY BRYAN**, with Offys and **MARIO ANDRETTI**, with Ford engines, were the principal drivers for McGee and Brawner.

Clint Brawner, 4<sup>th</sup> from left, Jim McGee 5<sup>th</sup> from left  
Al Dean, far right  
Mario in car  
1967



MARIO ANDRETTI & CREW-1967-INDIANAPOLIS MOTOR SPEEDWAY



## 1968

The Drakes put it all together, with their staff and with their suppliers and the engine had a big year in 1968, winning ten races including Indy. But Ford got their turbocharging and fueling working. Lou and Sonny Meyer and George Bignotti saw to that. They came back in 1969 to win sixteen races in a season that saw Plymouth, Chevrolet and Repco also win races. Ford won at Indy again in 1970 and 1971, but decided they had had enough and after the Meyers declined to take it over, they turned the engine program over to AJ Foyt and his engine wizard Howard Gilbert. Foyt had some success with the engine in his non-pareil hands as a driver, but few others bought or had any success with the Foyt-built Fords.

Racing was getting competitive! And expensive! Lou Meyer told me that Ford really wanted to just build and sell passenger cars and were tired of all the cost and development time needed to keep ahead of the racing competition. Ford ended their racing program in late 1969.

### **Drake 15 wins... Ford 12**

In 1968 there were 15 Drake-Offy wins (\$17,000 engines). A Gerhardt car probably tuned by Drakes won three ... an Eagle tuned by the Gurney shop won four (Dan drove his Weslake-Ford) ... Lloyd Ruby won two in a Mongoose ... and Mario won 1 in a Brawner-Hawk.

Ford had to go to DOHC, then turbocharging ... it was all very expensive! There were probably a lot of structural changes to the engine, and the price was still heavily subsidized by Ford.

But Ford got their turbocharging and fueling working. Lou and Sonny Meyer and George Bignotti saw to that. They came back in 1969 to win sixteen races (\$23,000 engines) some with TCs in a season that saw Plymouth, Chevrolet and Repco win races.

Hilborn improved the Drake intake runners. The engine was now giving about 625 hp.

All this development paid off in 1968, and forced Ford into further, costly, development of their engine.

Repco/Brabham called for a 4.281" x 2.75" engine. Porter also worked on the short stroke development. Everything was being tuned up, improved and refined ... camshaft timing, magnetos, fuel injection.

Rule changes reduce blown engine size to 161.703 cid

March 17, 1968 ... Hanford 200 ... **Johncock wins in Gerhardt-Drake TC**. Ruby is 3rd in Mongoose-Drake TC, Bobby Unser is 5th in an Eagle-Drake TC ... all qualified in top ten. Art Pollard qualified 2<sup>nd</sup> in a Gerhardt-Drake TC

March 31 ... Las Vegas 150 ... Mostly Fords, including Bobby Unser's Eagle winner.

April 7 ... Phoenix 150 ... **Bobby has Drake back in his Eagle and wins**, pole to pole. Drakes take 8 of 10 top spots.

April 21 ... Trenton 200 ... **Bobby wins again in Eagle-Drake** (Herb Porter in crew). McCluskey (Eagle) and Ruby qualify 2<sup>nd</sup> and 3<sup>rd</sup>. Ford turbochargers show up.



America vs. Germany Test

# '70 LT-1 Corvette - Porsche 911E Face-Off

## MOTOR TREND

The Complete Automotive Magazine

UK 4/3 Sweden KR 2/25 INT. mono 50c MAY 1970

Audi: VW's New Attack on Detroit

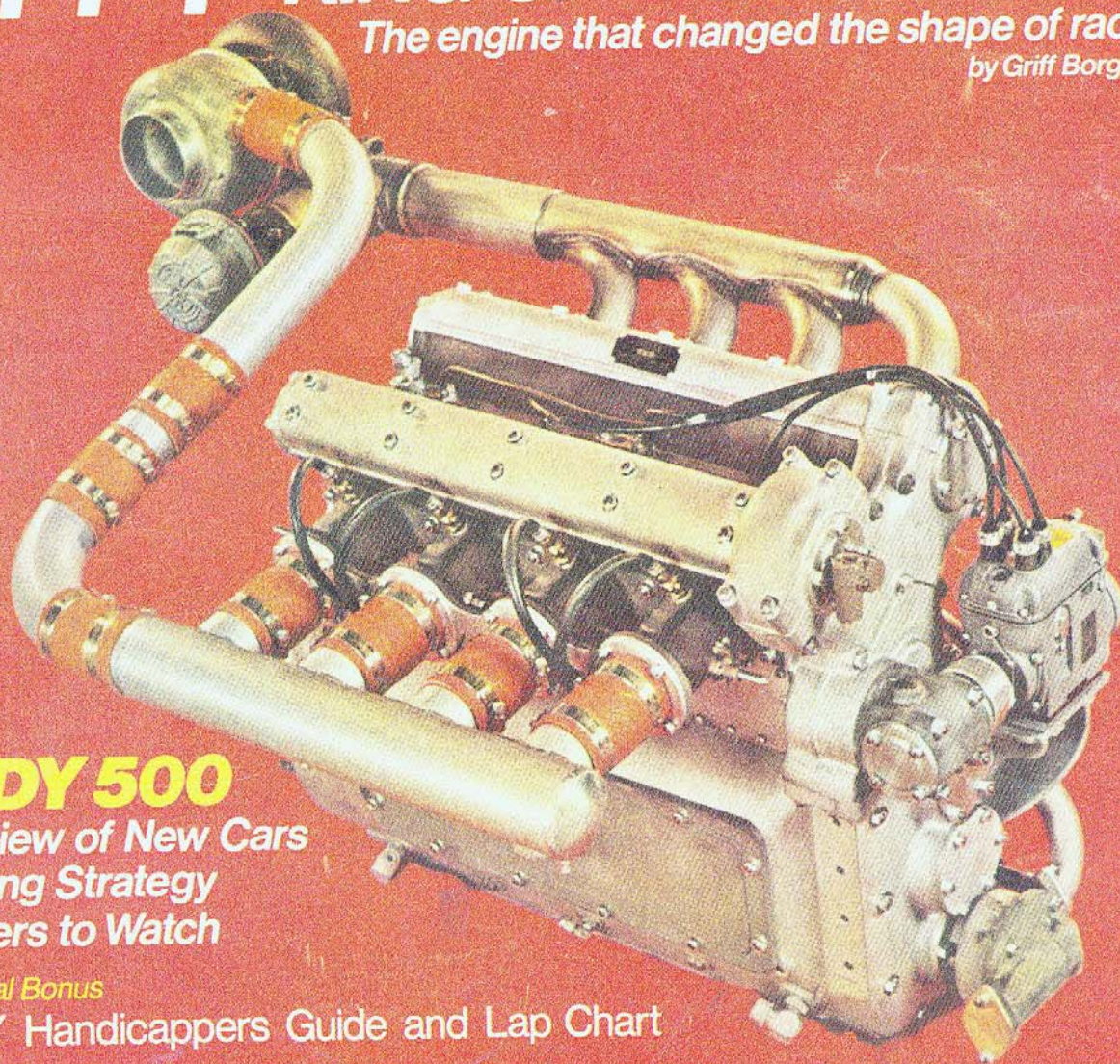
'Cuda Comparison Test  
Hemi•440•340•New 340 6-Pack

Detroit's New Low-Buck Big Cars

Unleaded Gas: What's it all About?

# OFFY-KING OF VICTORY LANE

The engine that changed the shape of racing  
by Griff Borgeson



## INDY 500

Preview of New Cars  
Racing Strategy  
Drivers to Watch

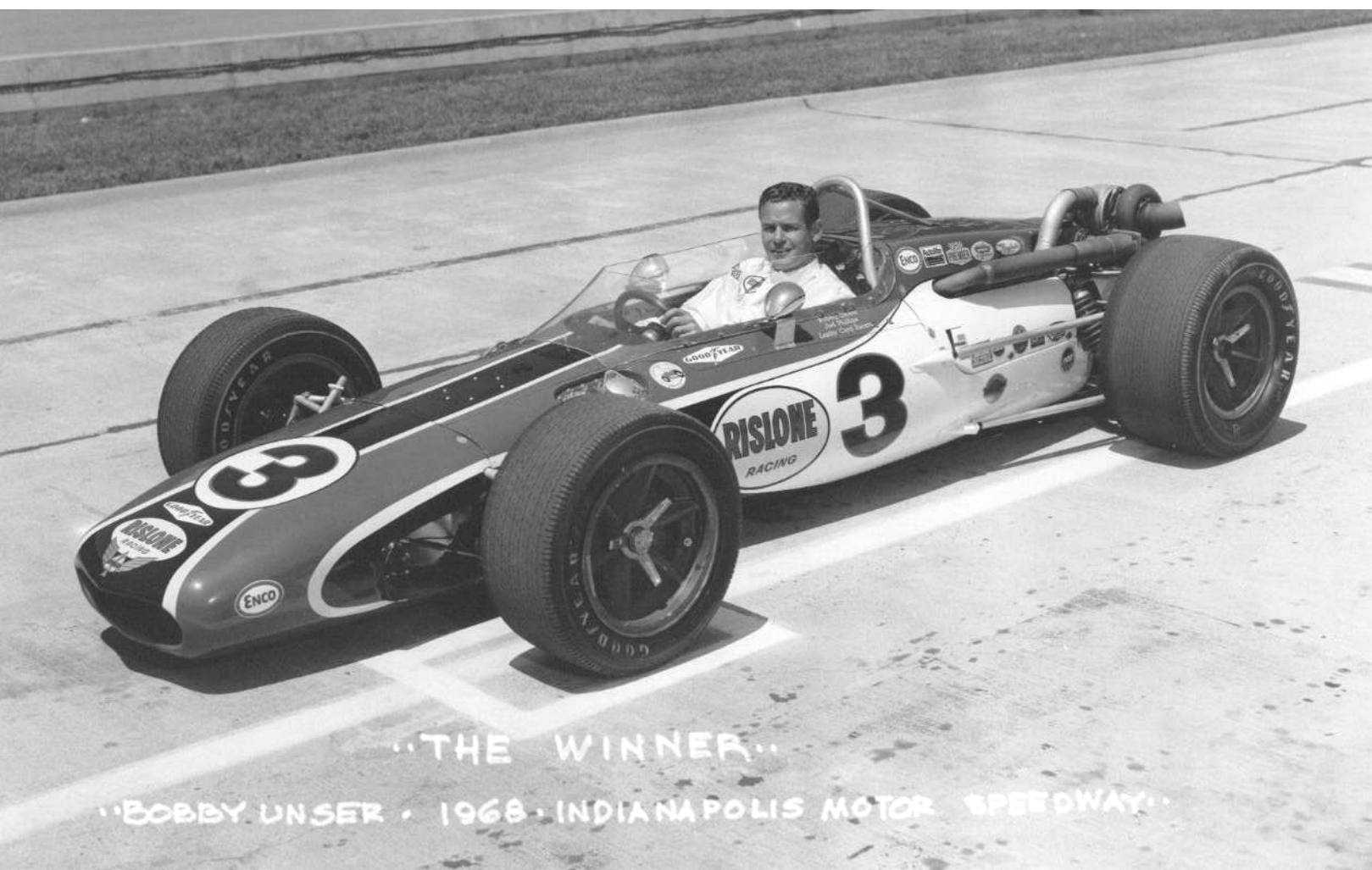
Special Bonus

INDY Handicappers Guide and Lap Chart





**May 30 ... Indianapolis 500 ... Bobby wins with Drake TC** after qualifying 3<sup>rd</sup> (behind two of the three turbine cars). Drake engines in eight of top ten. McClusky Q7th, Ruby Q5th, Johncock Q9th.



RE #3 Rislone Eagle/Offy 168 turbo Bobby Unser Q3@169.507 WIN

Drake-engined Mel Kenyon 3<sup>rd</sup> Gerhardt, Ruby 5<sup>th</sup>, Duman 6<sup>th</sup>, B Vukovich 7<sup>th</sup>, Mosley 8<sup>th</sup>, Sessions 9<sup>th</sup>, Grim 10<sup>th</sup>, Veith 11<sup>th</sup> Gerhardt  
Ruby Q5@167.613 Mongoose, McCluskey Q7 166.976 Eagle

Nine Offys in first 11, one Ford-Weslake 305 and one Ford 255. There were four Ford 168 turbos in the race driven by Grant, Knepper, Al Unser, M Andretti. Drake (\$17,000) WINS INDY and 14 other champ car races. Ford (\$23,000. Mario qualified his Ford 4th @ 167.69, burns piston in 2 laps.

Andy's turbines were fast, but failed.

# "800 horsepower from 159 cubic inches at 9,000 rpm. The Offy's no weakling."

John Jorgensen, president of Jorgensen Steel, talks about the Jorgensen Eagle USAC championship car's engine:

"Any engine that's dominated American speedway racing over the years like the Drake Engineering Company's Offy is worth a close look.

"One reason for its success is simplicity. The Offy has just four cylinders. With just half as many moving parts as a V-8, there are only half as many things to go wrong. But, with all the stresses imposed by a high-boost turbocharger, material selection is more critical than ever.

"For example, the cylinder block, with integral head, is an all-aluminum casting. Crankshaft and connecting rods are forged from special aircraft quality nickel-chrome-moly (4340) steel. The camshaft is made from nickel-moly (4620) steel, carburized and hardened.

Gears are cut from hardened and nitrided 4340 steel. Wrist pins are machined from Hy-Tuf bar stock, hardened and plated.

"Now, you probably think that Drake Engineering must go through a lot of hassles to get all these different metals. Well, they don't. Practically all of it is available from one source—Jorgensen Steel.

Just like all the steel and aluminum that goes into the Eagle chassis built by Dan Gurney's All American Racers.

"Just remember this: You don't have to run with a fast crowd to benefit from Jorgensen's huge inventory and fast service.

No matter what the size of your order, call Jorgensen first!"



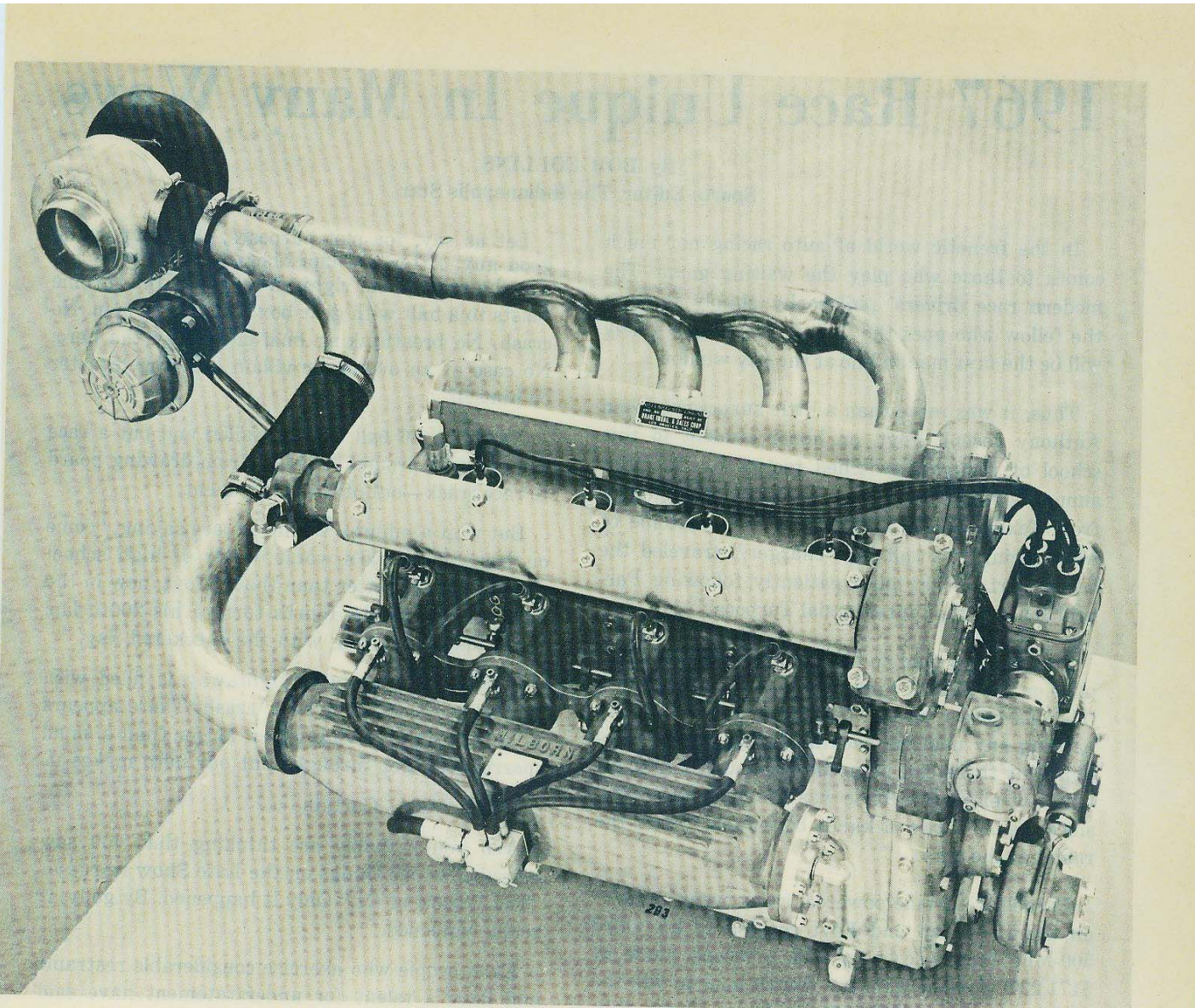
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Here's the 1968 Turbocharged Offenhauser racing engine.

# OFFY

is manufactured by

## **DRAKE ENGINEERING & SALES CO.**

**2001 West Gage Avenue  
Los Angeles, California 90047**

Dale Drake, Chairman of the Board

John Drake, President





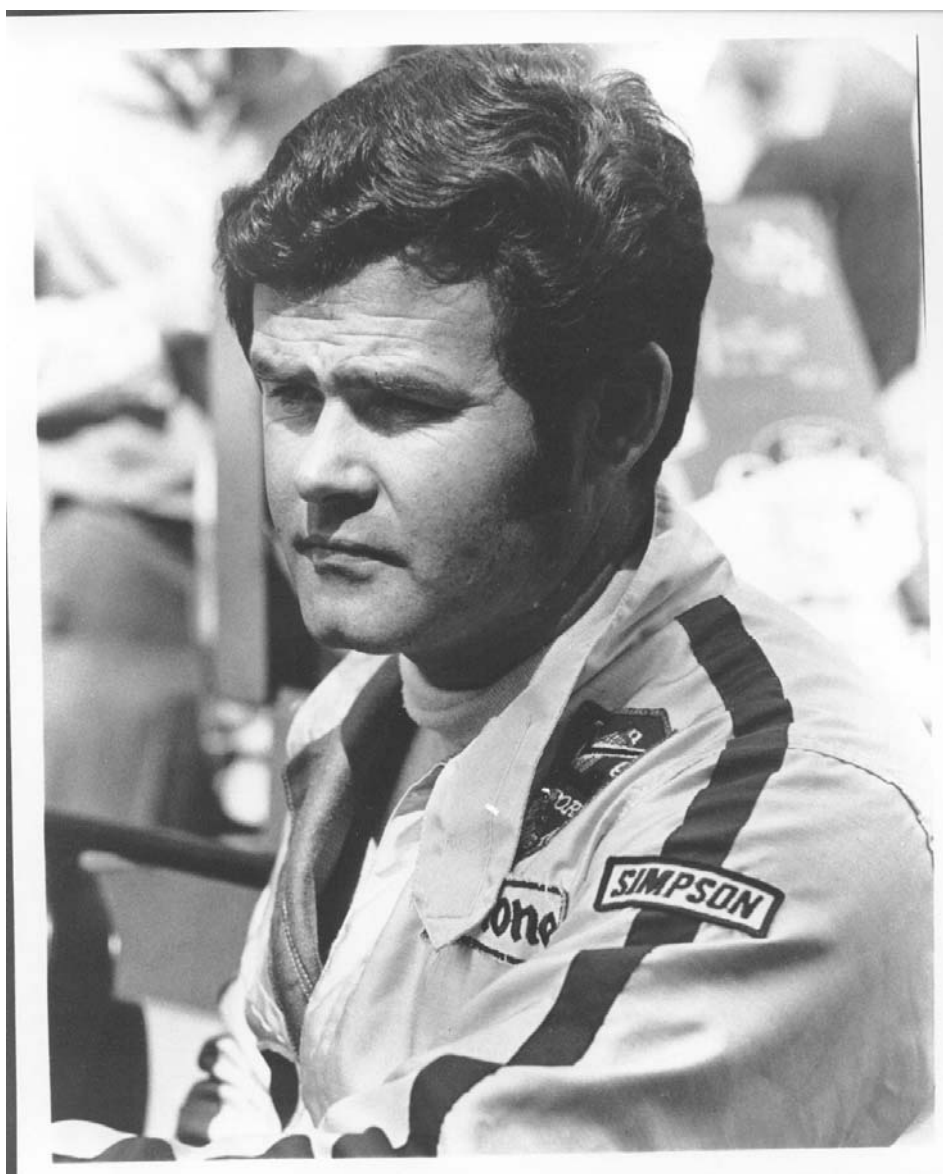
June 9 ... Milwaukee 150 ... **Lloyd Ruby wins in Mongoose-Drake TC**

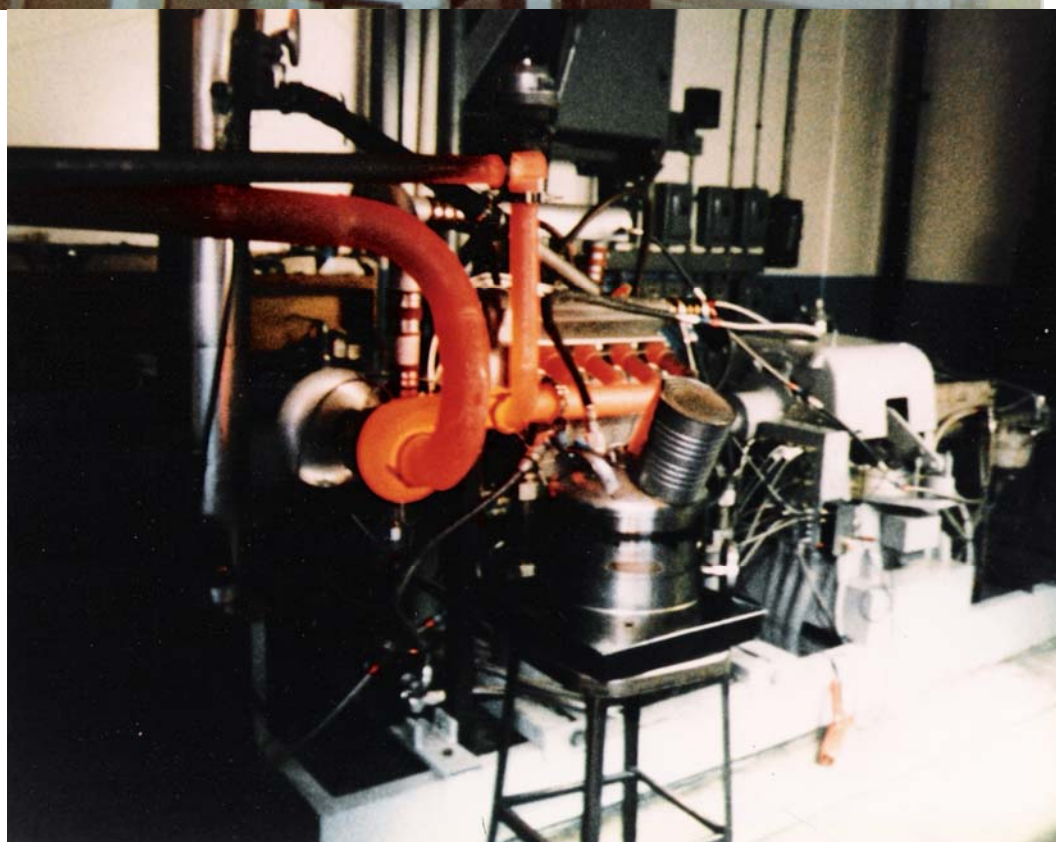
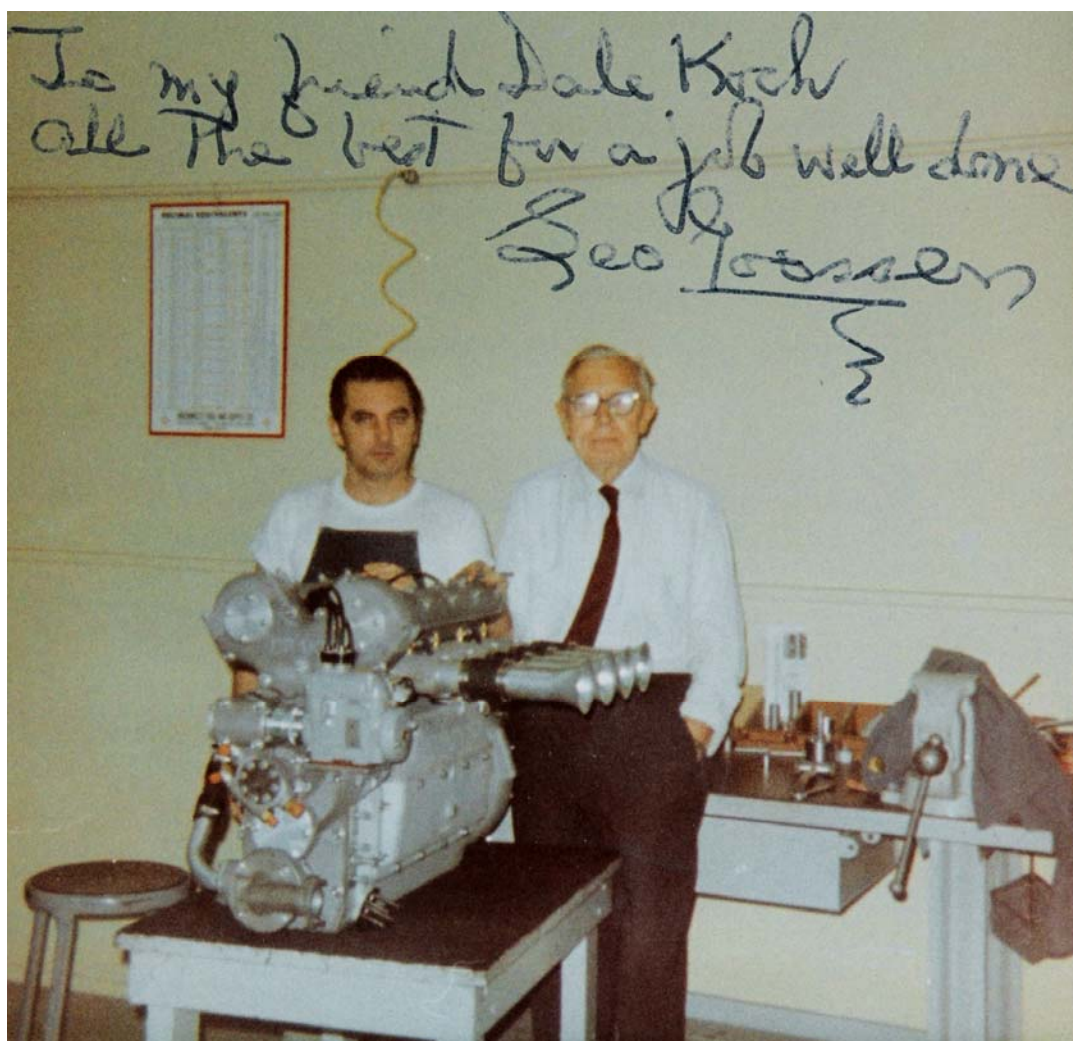
June 15 ... Mosport 100 (twice) ... Mostly Ford.

June 23 ... Langhorne 150 ... **Johncock wins in Gerhardt-Drake**, pole-to-pole. Five Drake qualify in top ten.

July 7 ... Castle Rock 150 ... Mostly Ford, Bobby Q 2<sup>nd</sup>.

July 13 ... Nazareth 100 ... **All Offy**, only Ruby in TC, Q5th. **Al Unser wins**.







July 21 ... Indianapolis road 100 twice ... Mostly Ford.

July 28 ... Langhorne 100 ... Bobby 2<sup>nd</sup> Q5th in one race, Q2nd in other race.

August 4 ... San Jovite 100 (twice) ... Mostly Ford

August 17 ... Springfield 100 dirt... **McCluskey wins in Offy (Drake?)** no TCs.

August 18 ... Milwaukee 200 ... **Ruby wins in Mongoose-Drake** Q7th. Bobby Q4th, finished 4<sup>th</sup>.

September 2 ... DuQuoin 100 dirt ... **Mario wins in Kuzma-Drake** ... no TCs

September 7 ... Indianapolis 100 dirt ... **AJ wins in Meskowski-Drake** ... no TCs

September 22 ... Trenton 200 ... **Mario wins in Brawner-Drake**



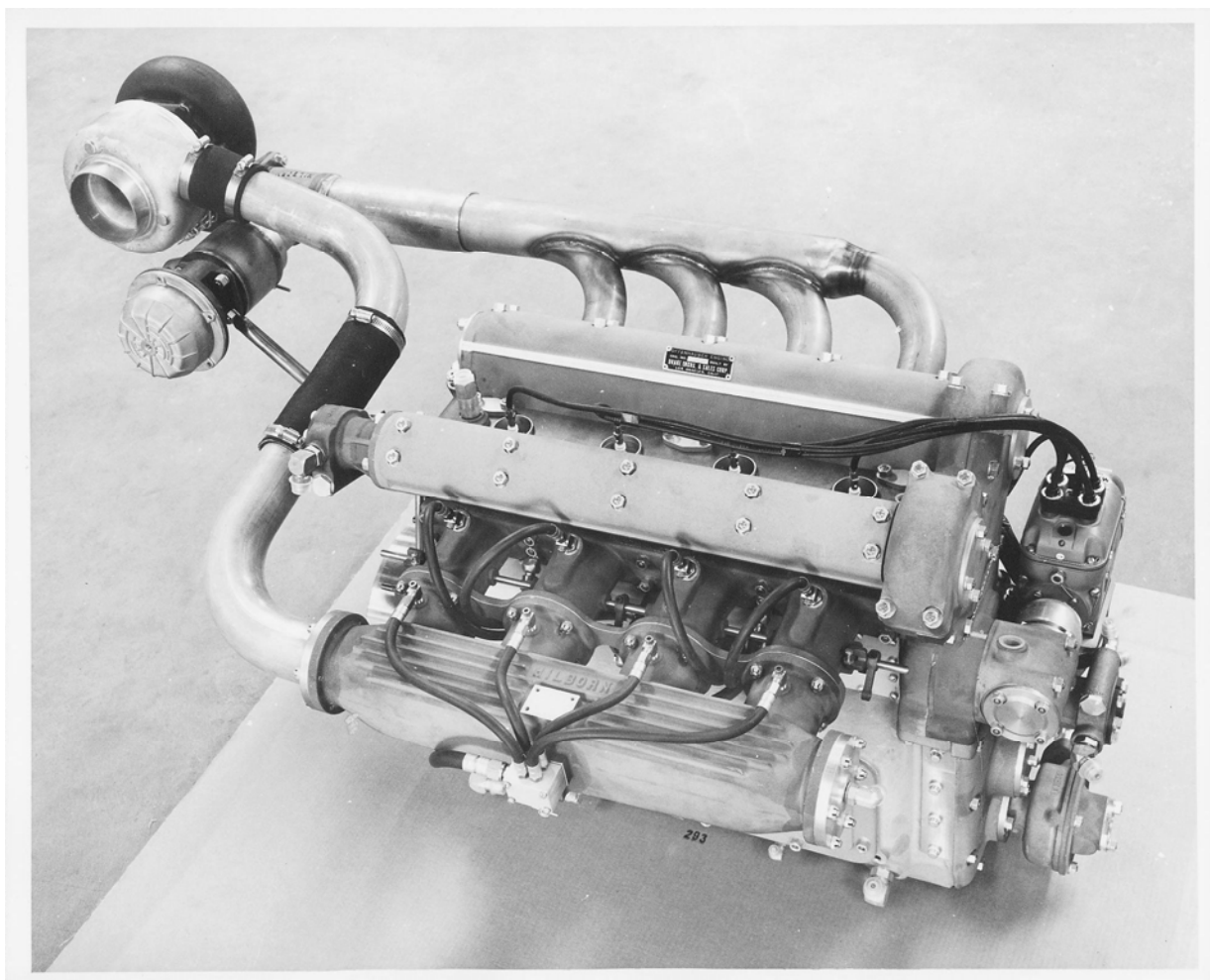
September 29 ... Sacramento 100 dirt ... **AJ wins in Meskowski-Drake** ... only one TC

October 13 ... Brooklyn MI 250 ... **Ronnie Bucknum wins in Eagle-Drake**. Drake take 8 of 10 top spots

November 3 ... Hanford 250 ... Foyt wins in Coyote-Ford TC. Drake takes 8 of 10 top spots.

November 17 ... Phoenix 200 ... Gary **Bettenhausen wins in Gerhardt-Drake**. Drake takes 9 of 10 top spots.

December 1 .. Riverside 300 ... Only one Drake in race.



**1969****Drake 4 wins ... Ford 16**

Racing was getting competitive! And expensive. Lou Meyer told me that Ford wanted to build and sell passenger cars and were tired of all the cost and development time needed to keep ahead of the competition. Ford ended their racing program in late 1969. After the Meyers declined to take it over, they gave it to AJ Foyt who was able to make the engine competitive with Howard Gilbert building the engines. Foyt had some success with the engine in his non-pareil hands as a driver, but few others bought or had any success with the Foyt-built Fords.

There were two Drake-Offy wins by Art Pollard in a Gerhardt and by Bobby Unser in an Eagle.

George Bignotti joins Vels-Parnelli Jones and goes to Ford Engines. Ford was getting the hang of turbos. Lou Meyer retires, and leaves Ford race engines to AJ. Sonny takes Offy agency at around this time.

Wings appear at Indy. Engine size decreased from 171 cid to 162 for 1969. Leo drafted new sleeves at 4.030", with a relieved area to allow for valve clearance at the sleeve, for retrofitting the 168 blocks. A new block was designed for the new size. The engine was now giving 850 hp in qualifying, and about 730 hp for the 500,

Meyer & Drake Offys were still winners on dirt tracks (because of torque characteristics?) into 1969. Mario Andretti won at Springfield on 18 August, 1969. There may have been others of both makes being used, especially in the lower-budget sprint and midget classes.

March 30, 1969 ... Phoenix 150 ... George Follmer won in a Cheetah-Chevy, the rest of the top ten were Drakes

April 13 ... Hanford 200 ... Mario won in Hawk III-Ford, seven of 10 top spots were Drakes.

May 30 ... Indianapolis 500 ... Mario won. Four of top ten were Drakes, as were five of top ten qualifiers.

Mario wins Indy in Hawk-Ford 159 t/c Q2nd@169.85 WIN 200

BU finished 3<sup>rd</sup>, D'hue 4<sup>th</sup>, Johns 10<sup>th</sup>, Malloy 11<sup>th</sup>, Sessions 12<sup>th</sup>, Mosley 13<sup>th</sup>

Bobby Unser Lola Q3@169.683.

Donohue Q4 168.903 Lola

Johncock Q5 168.626 Gerhardt

McElreath Q7 168.224 Hawk II

G Bettenhausen Q9 167.777 Gerhardt

June 8 ... Milwaukee 150 ... **Art Pollard won in Gerhardt-Drake.** Five Drakes in top ten.

June 15 ... Langhorne 150 ... **Bobby Unser won in Eagle-Drake**

July 6 ... Castle Rock 150 road course ... Only one Drake TC

July 12 ... Nazareth 100 dirt ... **Mario won in Kuzma-Drake** ... No TCs

July 19 ... Trenton 200 ... Mario wins in Hawk III-Ford. Drake takes eight of top ten spots.

July 27 ... Indianapolis 100 road course (twice) ... Mostly Ford and others.

August 17 ... Milwaukee 200 ... Al Unser wins in Lola-Ford. Drake takes seven of top ten spots.



August 18 ... Springfield 100 ... **Mario won in Kuzma-Drake**

August 24 ... Dover DL 200 ... Pollard wins in Gerhardt-Plymouth. Drake takes five of top ten spots.

September 1 ... DuQuoin 100 dirt ... Al Unser wins in King-Ford. No Drake TCs.

September 6 ... Indianapolis 100 dirt ... No Drake TCs.

September 14 ... Brainard MN 100 road course(twice) ... Only one Drake TC.

September 21 ... Trenton 300 ... Mario wins in Hawk III-Ford ... Six Drakes in top ten.

September 28 ... Sacramento 100 dirt ... No TCs.

October 19 ... Kent 100 road course (twice) ... One Drake TC.


November 15 ... Phoenix 200 ... Al Unser wins in Lola-Ford. Seven Drakes in top ten.

December 7 ... Riverside 300 road course... Only four Drake TCs.

1970

Drake 3 wins ... Ford 15

**OFFICIAL PROGRAM**  
INDIANAPOLIS MOTOR SPEEDWAY  
MAY 30, 1970  
ONE DOLLAR



From this brand-new building in Southern California's Orange County, the great Drake Engineering team of racing engine builders will continue to turn out fine equipment just as they have done for many years. The Drake team of engineers, designers and master craftsmen has dominated Championship racing for more than 30 years. No other team has produced more winners: from the Drake team has come wins at all but seven Indianapolis 500 races since 1934.


Watch for new engine developments in the future from the great Drake team.

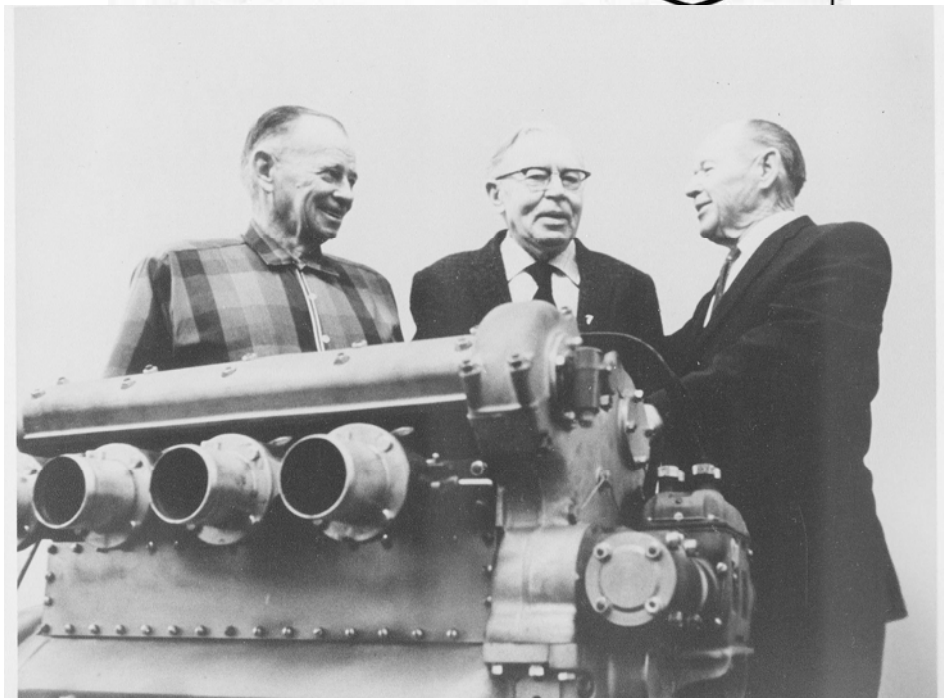
☆☆☆☆

**Drake Engineering & Sales Co.**  
17502 Daimler Street  
Santa Ana, California 92705  
Phone: (714) 540-9530

**Dale Drake**  
Chairman of the Board

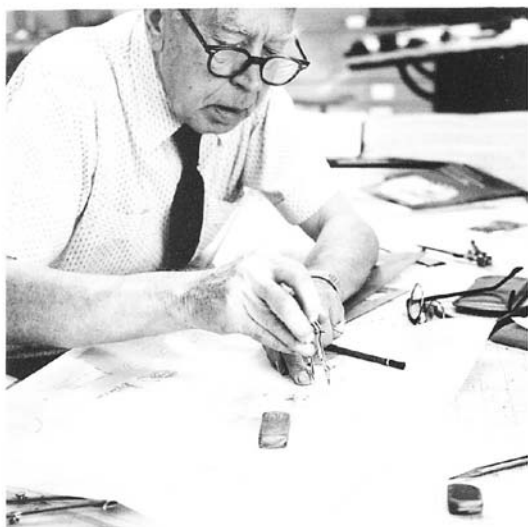
**John Drake**  
President

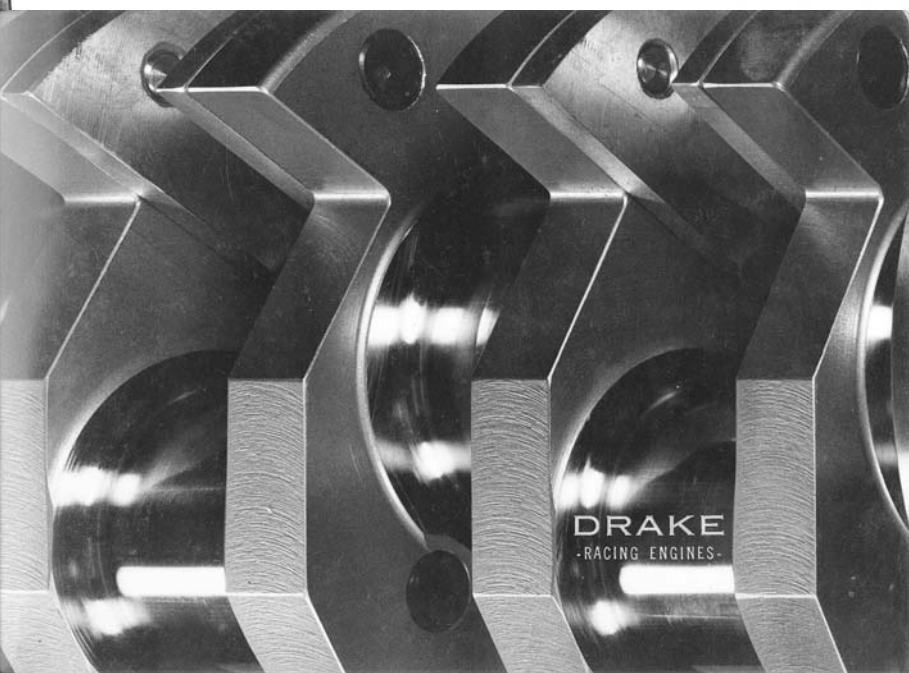


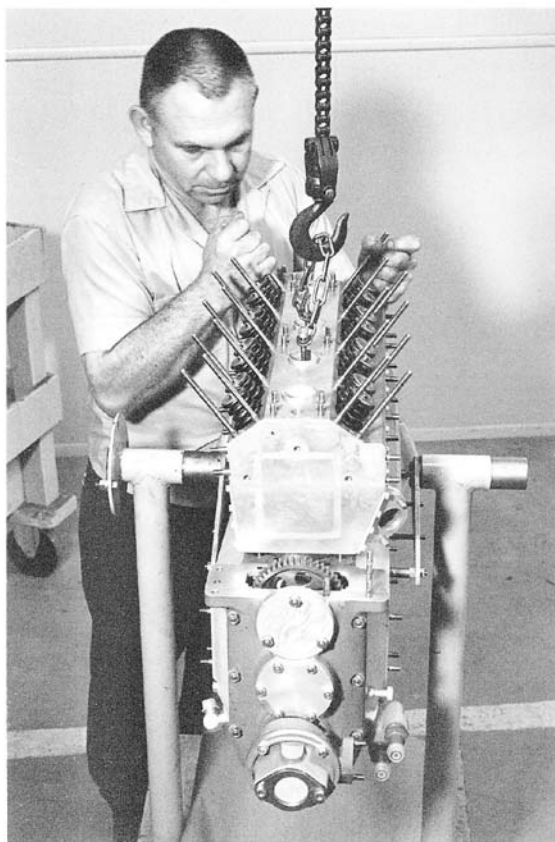
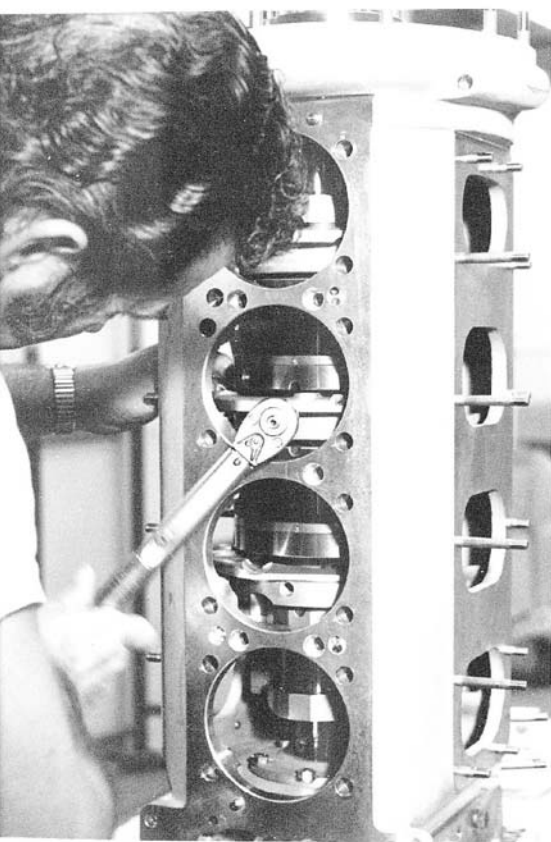




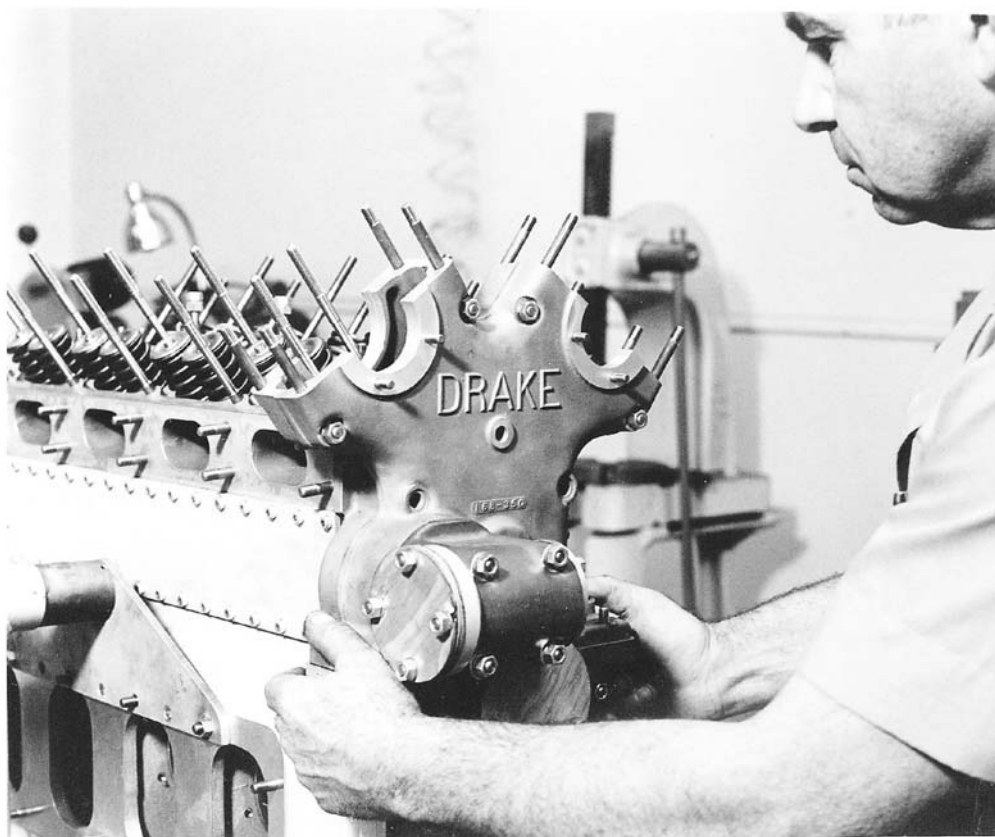
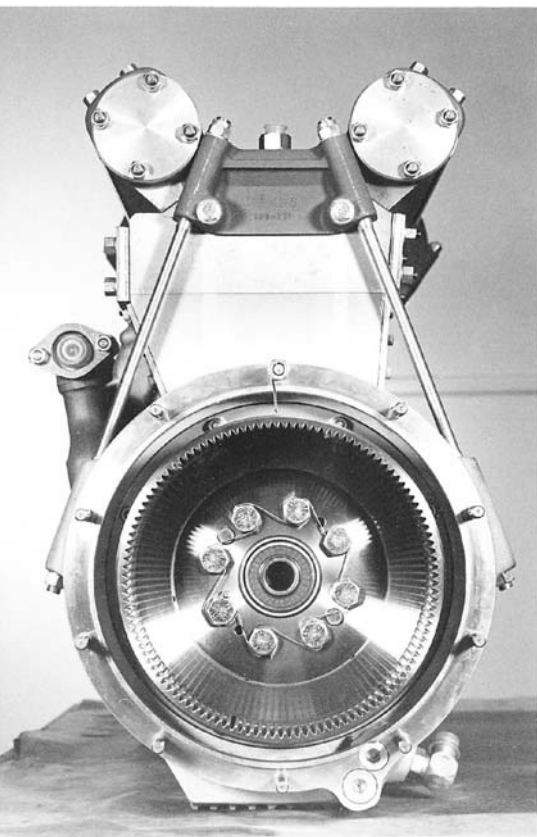


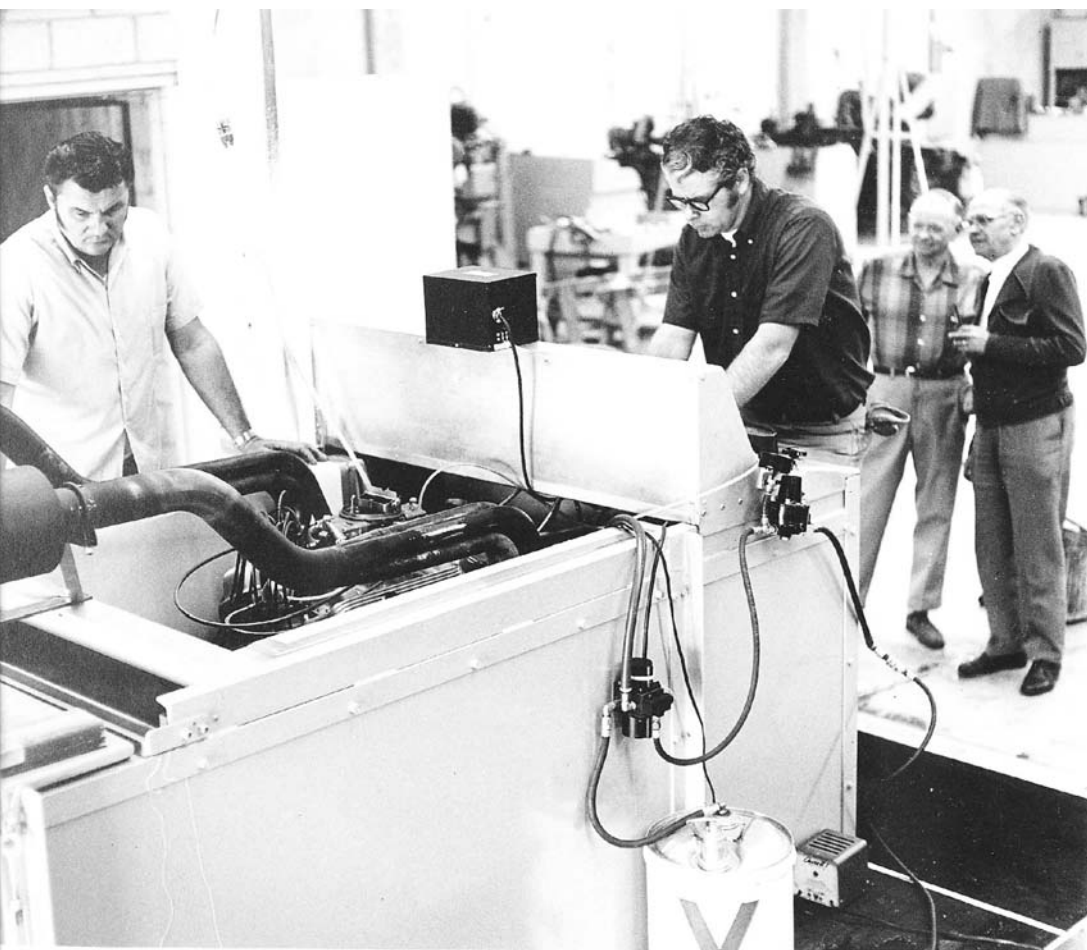


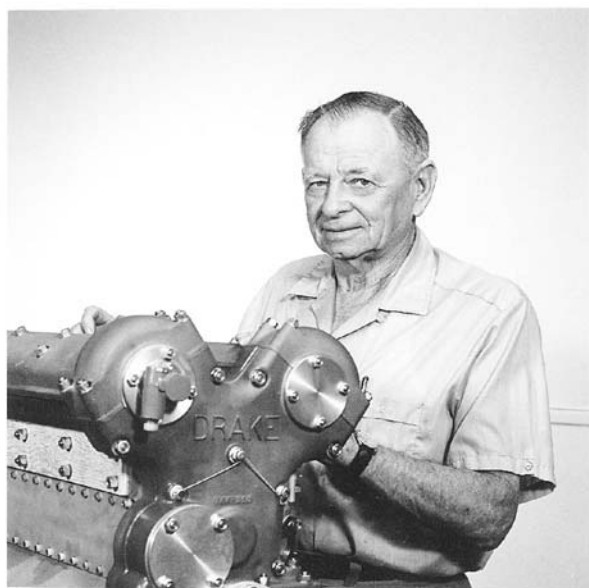




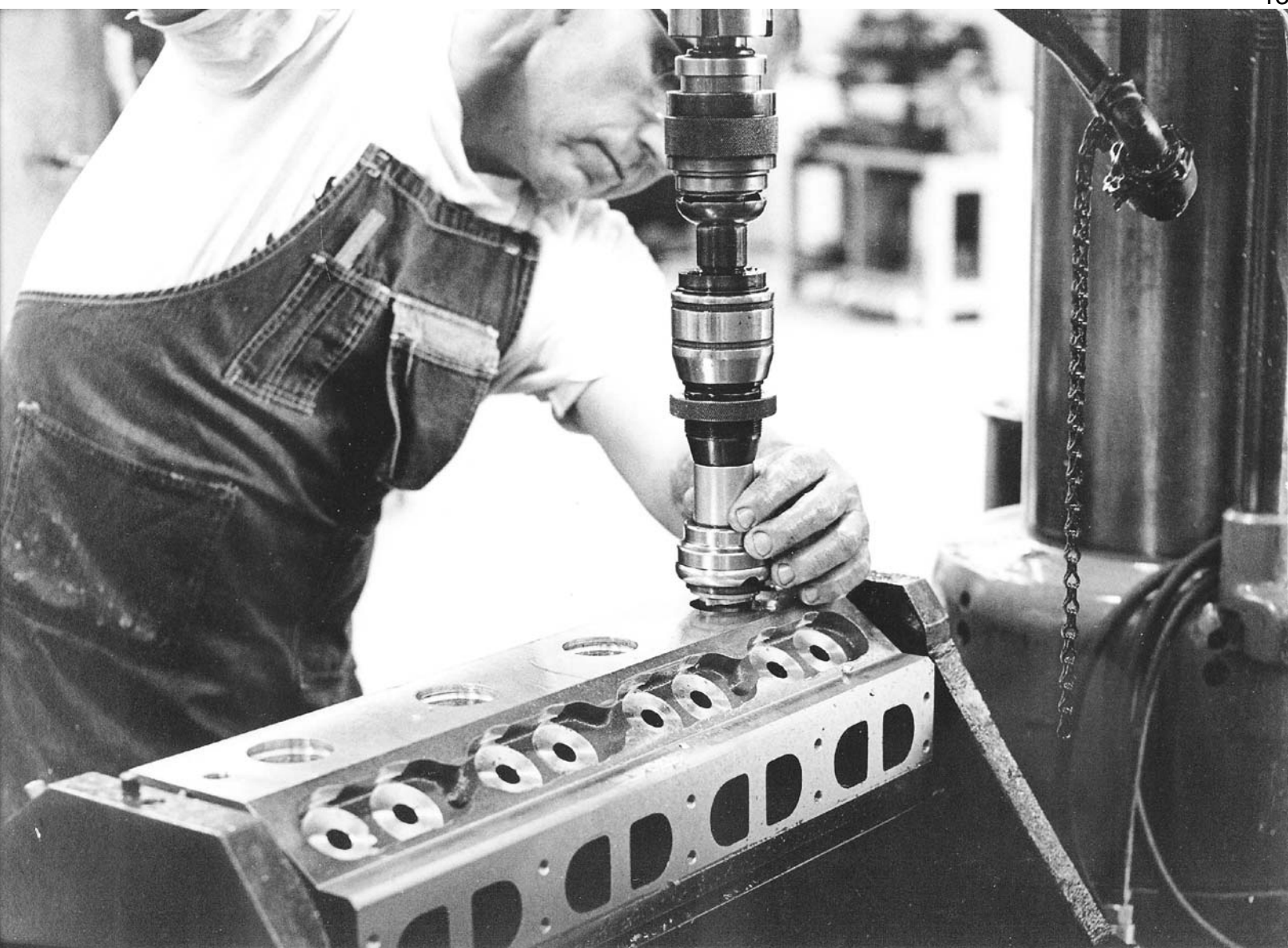












Dick Jones and Vels-Parnelli form R&D Engines and call for unique bore-stroke arrangements from Drake.



The AiResearch turbos were now putting out up to 85" of boost.

Brabham finished 13<sup>th</sup> at Indy in his short stroke Offy (more rpm, more power).

Dick Jones was getting up towards 1000 hp (short-stroke?) on his dyno (see Dicks picture with orange-hot Offy)

Ford gave their engine program to AJ Foyt

Louie retired. Later, Sonny Meyer and George Bignotti manned Pat Patricks's race shop ... and modified their Drake engines, with Leo, to 4.4375" x 2.6". And, later still, became agents for Drake.

John Miller was Dan Gurney's engine man at AAR. Miller carried out extensive mods to their Drake engines ..., Spaulding BDI spark unit, 19 deg spark advance, instead of 30 deg, Carrillo rods (at least three iterations), new wrist-pins, flat top, light-weight cam followers, and flat-profile camshafts allowed lower spring pressures and rpms to 10,000 and above, Miller told Ken Walton! Miller called for 4.37" x 2.65" for 1972, requiring changes to the block/crankcase assembly studs. Miller used mainly TRW pistons, but also tried Mahle and ForgedTrue (Art Sparks). Miller, like Porter, called for improved oiling and Leo began work on the two internal duplex pump design (the double-pumper). Cooling and placement of fuel injection pump were modified. Miller said he saw 1370 hp at 10,200 rpm on one (very) short dyno run.

Ford may have been discouraged by the need to frequently invest great amounts of capital to keep up with the changed rules, and the developmental improvements in the Drake engine, supported by the racing community. The Drake was supported by an amortized legacy of 50 years of tooling, suppliers and racers experienced with the Drake-Offy. The new Leo Levine book may shed some light on this.

The Ford engine program went to AJ Foyt. He would manufacture the Ford engine as a Foyt. Not many were sold. Apparently only AJ was successful with the engine. Sonny ran the Meyer shop. George Bignotti joined as a partner. They eventually sold the shop to Pat Patrick.

Before Indy, Drake Engineering and Sales Corporation moves to 17502 Daimler in Santa Ana. Dale is chairman, John is president. In 1972 Leo Goossen is shown as Chief Engineer.

McLaren's first year at Indy. Who were McLaren's engine people? What did they do to their Drake engines?

Al Unser won 10 races, and Joe Leonard won one for the Bignotti, Vels-Parnelli Jones, Johnny Lightning 500, P.J. Colt ... powered by Ford. Al won eight poles, and won pole-to pole five times. Only AJ Foyt, in 1964 won 10 races in a season. Bignotti is the only chief mechanic to have eleven wins in a season.

March 28, 1970 ... Phoenix 150 ... Al Unser Q2, won. There were 5 Drakes in the top ten.

April 4 ... Sears Point 150 road course ... Dan Gurney won in his Eagle-Ford. Only Mike Mosely had a Drake. Al Q4, was fourth.

April 26 ... Trenton 200 ... **Lloyd Ruby won in a Laycock-Drake**. Al Q1, was third.

May 30 ... Indianapolis 500 ... Al Q1, won. Three Drakes in top ten, four if Gurney had one as shown in Taylor's Indy book. Johnny Rutherford Q2 at 170.213 in the Patrick Eagle-Drake. Drakes qualified well.

#2 Johnny Lightning PJ Colt-/Ford 159 TC Al Unser Q1 @ 170.221 WIN 200

Gurney finished 3<sup>rd</sup>, Grant 7<sup>th</sup>, Muther 8<sup>th</sup>, Williams 9<sup>th</sup> (McLaren) with Drake engines

Bobby Unser/Eagle finished 11th, Gary Bettenhausen/Gerhardt 26th

Johnny Rutherford Q2 170.213 Patrick Eagle/Drake

Art Pollard Q6 168.595 Kingfish/Drake

Jim Malloy Q9 167.895 Gerhardt/Drake

June 7 ... Milwaukee 150 ... Joe Leonard won. Many Drakes in field and high Q spots. Al Q3, was third.

June 14 ... Langhorne 150 ... **Bobby Unser won in an Eagle-Drake**, one of eight in top ten. Al was second. Al Q6 was second.

June 28 ... Castle Rock 150 road course ... Mario won in McNamara-Ford. Al Q1, was fourth.

July 4 ... Brooklyn, MI 200 ... **Gary Bettenhausen won in Gerhardt-Drake**, followed by five others. Al Q4, was 18<sup>th</sup>, blew RR tire.

July 26 ... Indianapolis 150 road course ... Al Q2, won.

August 22 ... Springfield 100 ... Al Q6, won.

August 23 ... Milwaukee 200 ... Al Q1, won.

September 6 ... Ontario 500 ... Jim McElreath won in Coyote-Ford. Four Drakes in top ten. Al Q4, 9<sup>th</sup>, transmission

September 7 ... DuQuoin 100 dirt ... Al Q1, won in King-Ford.

September 12 ... Indianapolis 100 dirt ... Al Q6, won in King-Ford.

September 19 ... Sedalia 100 dirt ... Al Q1, won in King-Ford.

October 3 ... Trenton 300 ... Al Q1, won.

October 4 ... Sacramento 100 dirt ... Al won in King-Ford.

November 21 ... Phoenix 150 ... Swede Savage won in Eagle-Ford. Ford dominated.

**1971**

**Drake 4 wins ... Ford/Foyt 8**

McLaren was tuning engines for Donohue/McLaren, Bobby Unser/Eagle.

When did L Meyer Inc relinquish Ford arrangement?

McLaren brings wedge shape and wing for 10 mph gain. Ground effects (Jim Hall), also, Lotus 78 became important and came to Indy in 1979. What impact on engine rpm?

The short-stroke engine was taking over, and creating new problems in drive-lines. More power was called on to push the cars through their aerodynamic resistance ... and a new cycle of design was undertaken to solve the problems.

Revson's race engine was a factory engine, air shipped to Indy by John Drake. (Drake or McLaren specs???) (5)  
It's hard to find out the configuration detail for engines used in races.

Hilborn now introduced third stage fueling at the turbo, and ran both Ford and Drake engines on the dyno for a comparison!!!

Boost pressures were increased to 35 psi through the AiResearch TEO-6-90 turbocharger. This could be used for qualifying but was too high for racing. Improved rods, pistons and pins were being designed.

February 26, 1971 ... Rafaela, Argentina 150 ... Al Unser won in Colt-Ford.

March 27 ... Phoenix 150 ... Al won. Four Drakes in top ten, they qualified well.

April 25 ... Trenton 200 ... Mike Mosley won in Watson-Ford. Five Drakes in top ten, they qualified well.

May 29 ... Indianapolis 500 ... Al won.



#1 Johnny Lightning PJ Colt/Ford Al Unser  
#86 McLaren Cars McLaren-Drake short stroke Peter Revson  
Mark Donohue, also in McLaren-Drake Q2 at 177.087 F25, gearbox.

Q5th @ 174.522 WIN 200  
Q1 @ 178.696 F2 200



Denis Hulme in his McLaren-Drake Q4 at 174.910 and finished 17<sup>th</sup> in first appearance of McLaren at the Speedway.

The fourth McLaren had a Ford.

Six Drakes were in top 10.

Jim Malloy finished 4<sup>th</sup>, B Vukovich 5<sup>th</sup>, Tingelstad 7<sup>th</sup>, Zimmerman 8<sup>th</sup>, G Bettenhausen 10<sup>th</sup> (Gerhardt)

Bobby Unser Q3 175.816 Eagle

Denis Hulme Q4 174.910 McLaren

June 6 ... Milwaukee 150 ... Al won. Four Drakes in top ten.

July 3 ... Pocono 500 ... **Mark Donohue Q1, and won in his Sunoco (Penske) McLaren-Drake.** Five Drakes in top ten.

July 18 ... Brooklyn 200 ... **Donohue Q2, and won.** Seven Drakes in top ten.

August 15 ... Milwaukee 200 ... **Bobby Unser Q1, won in Eagle-Drake.** Five Drakes in top ten.



September 5 ... Ontario 500 ... Joe Leonard won in Colt-Ford. Five Drakes in top ten. Peter Revson Q3 F7 in McLaren-Drake.

October 3 ... Trenton 300 ... **Bobby Q1, and won.** Six Drakes in top ten.

October 23 ... Phoenix 150 ... Foyt won. Five Drakes in top ten.

## **1972**

**Drake 10 wins** ... four in Eagles, three in McLarens, three in Parnellis ... Ford nil

George goes back to the Offy. Dale Drake died this year. Fred Carrillo made some rods for Drake engines.

AJ Foyt was in only five races, winning no poles, no races and only 75 points. He had won 2,320 points in 1971, and 1,105 points in 1970. Drake engines won every race in 1972.

March 18, 1972 ... Phoenix 150 ... **Bobby Unser Q1, won in Eagle-Drake.** Nine Drakes in top ten. Top drivers Kenyon, Ruby, Simon, Pollard, Hiss, Hurtubise, Eaton, Dallenbach and AJ himself drove Ford powered cars.

April 23 ... Trenton 200 ... **Gary Bettenhausen Q5, won, in McLaren-Drake.** Drake swept top ten places.

**May 27 ... Indianapolis 500 ...** Mark Donohue Q3 at 191.408, and won, followed home by Al Unser and Joe Leonard, Sam Posey, Mike Hiss and Mario Andretti in first 10. There were 11 Foyt engines in the field.

**#66 Penske McLaren-Drake159 (short-stroke) Mark Donohue [Q3@191.408 WIN](#)**





RP 1019

MARK DONOHUE, DRIVER FOR THE 1971 SUNOCO RACING TEAM.

From: Professionals In Motion, 250 Leader Building, Cleveland, Ohio 44114



MARK DONOHUE AND THE SUNOCO SPECIAL McLAREN

RP 1011



1971 SUNOCO SPECIAL McLAREN  
MARK DONOHUE, DRIVER  
KARL KAINHOFER, CHIEF MECHANIC

RP 1016



Al Unser finished 2<sup>nd</sup>, Leonard 3<sup>rd</sup>, Posey 5<sup>th</sup>, Hiss 7<sup>th</sup>, Mario 8<sup>th</sup>

Bobby Unser Q1 195.940 Eagle/Drake  
 Peter Revson Q2 192.885 McLaren  
 Mark Donohue Q3 191.4208 McLaren  
 G Bettenhausen Q4 188.877 McLaren  
 PJ Q 5 187.617 Parnelli  
 Joe Leonard Q6 185.223 Parnelli  
 Sam Posey Q7 184.379 Eagle  
 Johnny Rutherford Q8 182.234 Patrick Brabham  
 Swede Savage Q9 181.726 Patrick Eagle  
 Steve Krisilof Q10 181.433 Kingfish

June 4 ... Milwaukee 150 ... **Bobby Unser Q1 and won in Eagle-Drake.** Five Foyts in the field, none in top ten.

July 16 ... Brooklyn, MI 200 ... **Joe Leonard Q11, won in Parnelli-Drake.** Five of the six Foyts were in the top ten.

July 29 ... Pocono 500 ... **Joe Leonard Q6, won.** Seven Foyts in field, one in top ten.

August 13 ... Milwaukee 200 ... **Joe Leonard Q2, won.** Six Foyts in field, one in top ten.

September 3 ... Ontario 500 ... **Roger McCluskey Q8, won in McLaren-Drake.** Seven Foyts in field, three in top ten.

September 24 ... Trenton 300 ... **Bobby Unser Q1, won in Eagle-Drake.** Six Foyts in field, three in top ten.

November 4 ... Phoenix 150 ... **Bobby Q3, wins.** Five Foyts in field, one in top ten.



**1973****Drake 14 wins ... Foyt 2**

Foyt won two races ... all others won by Drake. Parnelli, Gurney and McLaren sharing the honors.

AJ was in 12 races, wins two poles, two races, and 1,580 points.

Bignotti and Meyer could see that the Drake, at 36 deg valve angle could not make full power and meet the mileage requirement. Leo and Art Sparks began to look at improved designs for the valve-train and combustion chamber. Sparks took their design to Germany and had it analyzed. Working with Bignotti and Meyer, Drake began working on the new design, to be called the Drake-Goossen-Sparks engine. The valves would be inclined at 22 deg.

George joins Patrick

April 7, 1973 ... College Station, Texas 200 ... **Al Unser Q4, won in Parnelli-Drake.** Three Foyts in top ten. Seven in field.

April 15 ... Trenton 150 ... AJ Foyt Q2, wins in Coyote-Ford. Two Foyts in top ten. Four in field.

April 15 ... Trenton 150, heat two ... **Mario Andretti Q 4, wins in Parnelli-Drake.** One Foyt in top ten of three in field.

**May 30 ... Indianapolis 500 ...** Gordon Johncock Q11 at 192.555 wins in Eagle/Drake.

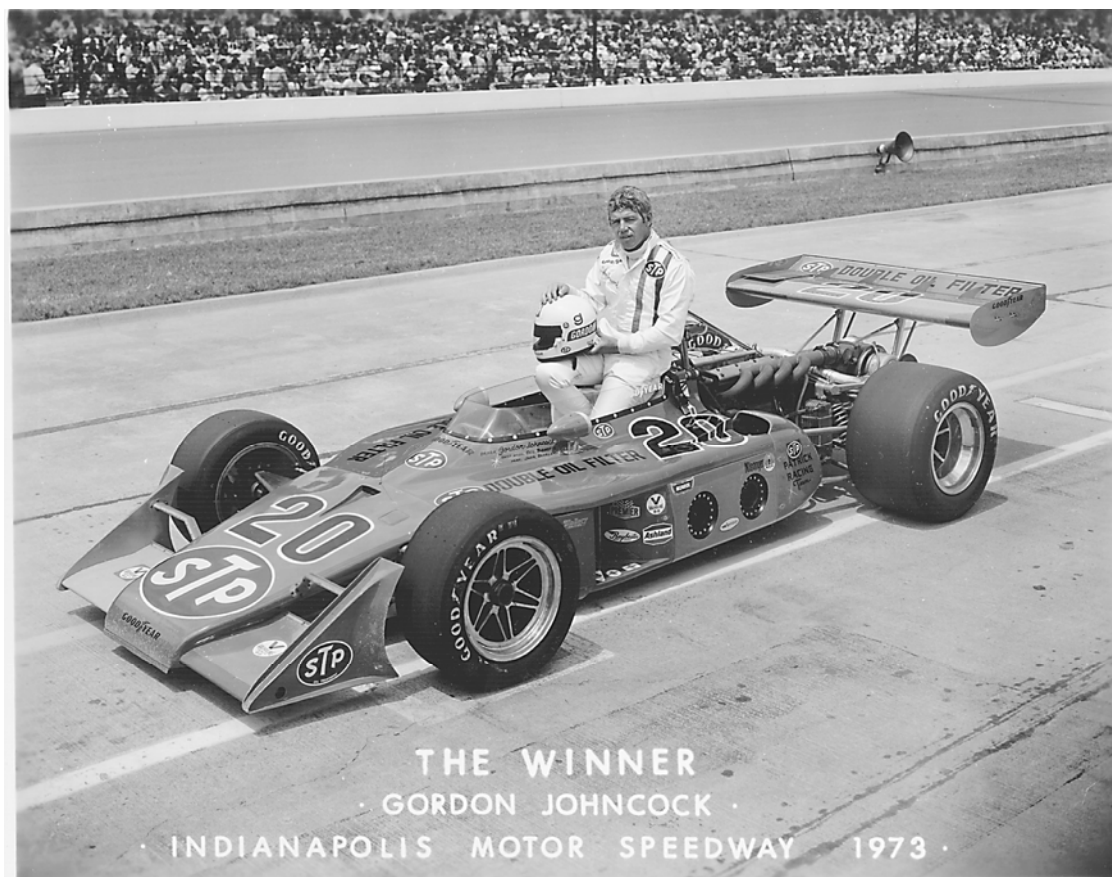


Johnny Rutherford Q1 at 198.413 F9. One Foyt in top ten of field of six.

#20 Bignotti Eagle-Drake157

Gordon Johncock

Q11@192.555 WIN 133



Johnny Rutherford McLaren/Drake

Q1 198.413

Drake took 9 of 10 top finishes, 5 Eagles, 4 McLarens

Bobby Unser Q2 198.183 Eagle

Donohue Q3 197.412 Eagle

Savage Q4 196.582 Patrick Eagle

G Bettenhausen Q 5<sup>th</sup> 195.599 McLaren

Mario Q6 195.059? Parnelli

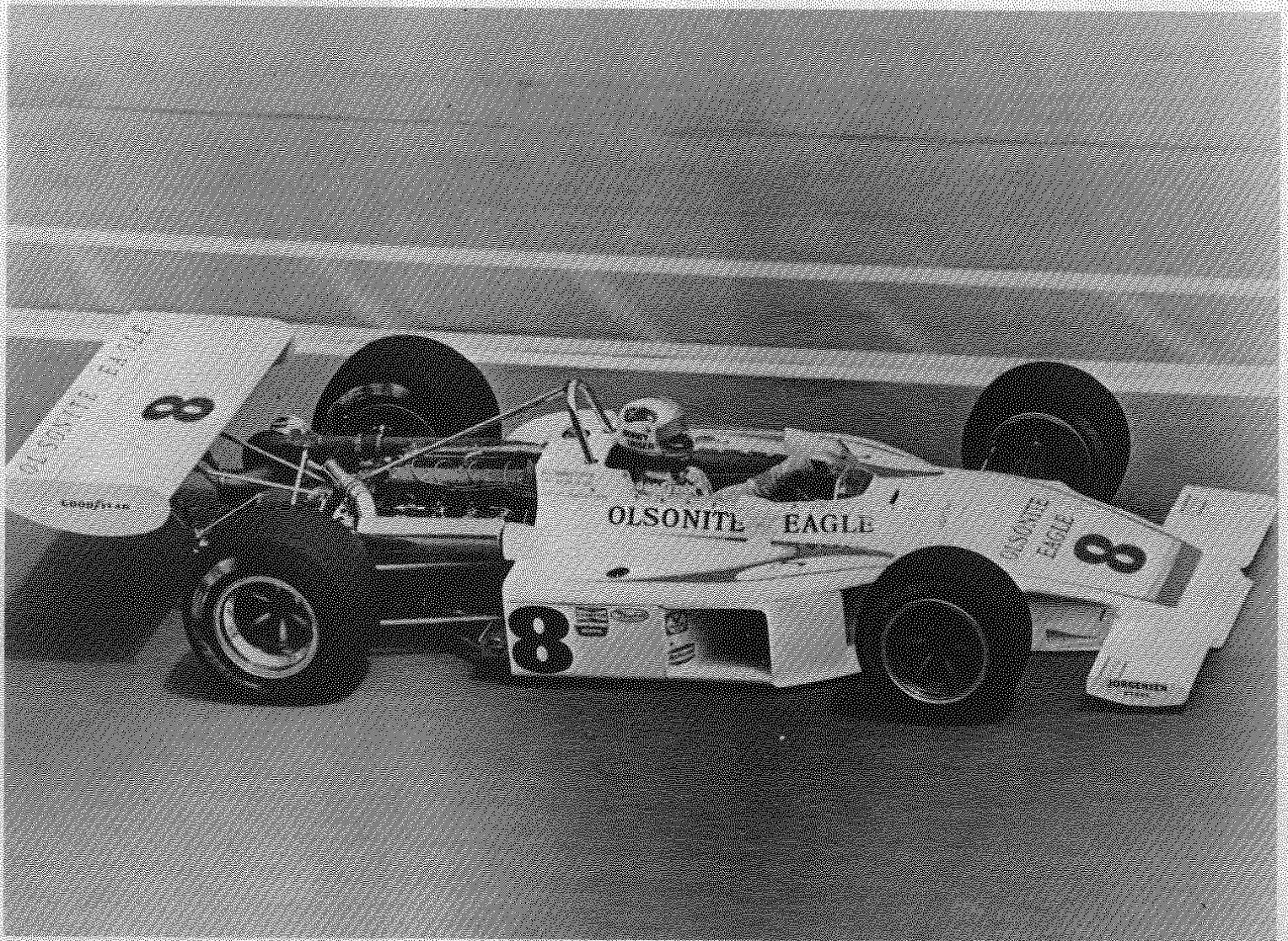
Krisilof Q7 194.932 Kingfish

Al Unser Q8 194.879 Parnelli

Caruthers Q9 194.217 Eagle

Revson Q10 192.606

June 10 ... Milwaukee 150 ... **Bobby Q1, wins in Eagle-Drake.** Two Foyts in field, 'way down.



Bobby Unser's 1973 AAR Eagle, the same car in which he previously set a closed course world speed record.

July 1 ... Pocono 500 ... AJ Q14, wins in Coyote-Ford. Five other Foyts out of top ten.

July 15 ... Brooklyn, MI 200 ... **Roger McCluskey Q4, wins in McLaren-Drake.** One Foyt in top ten, three others in field.

August 12 ... Milwaukee 200 ... **Wally Dallenbach Q1, wins in Eagle-Drake.** One Foyt in top ten, five others in field.

August 26 ... Ontario 100 ... **Wally Q5, wins.** No Foyts in field.

August 26 ... Ontario 100 second heat ... **Johnny Rutherford Q1, wins in McLaren-Drake.** One Foyt in field.

September 2 ... Ontario 500 ... **Wally Q5, wins.** One Foyt in top ten, (AJ is 10<sup>th</sup>) plus George Snider and Dick Simon in the other two Foyts.

September 16 ... Brooklyn, MI 126 ... **Billy Vukovich Q14, wins** in Sugaripe Eagle-Drake. AJ and Jigger Sirois are the only Foyts.

September 16 ... Brooklyn, MI 126 second heat ... **Johnny Rutherford Q2, wins in McLaren-Drake**. Jigger and AJ are only Foyts.

September 23 ... Trenton 200 ... **Gordon Johncock Q1, wins in Eagle-Drake**. AJ and Dick Simon are only Foyts.

October 6 ... College Station, Texas 200 ... **Gary Bettenhausen Q14, wins in McLaren-Drake**. AJ and Mel Kenyon in top ten, along with two others in the field.

November 3 ... Phoenix 150 ... **Gordon Johncock Q1, wins in Eagle-Drake**. Dick Simon in top ten, George Snider in field, in Foyts.





**1974**

**Drake 12 wins ... Foyt 2**

Again, Foyt won two. AJ is in 12 races, wins eight poles, two races and 1,510 points.

... Drake won all the others. Gurney and McLaren sharing the honors.

George now with Patrick. Art Sparks brings piston ideas. They go to 22 degree valve angle for DGS engines.

USAC mandates boost down to 80 inches. On-board tank cap'y down to 40 gallons, (total fuel ... 240 gals???) (for 1975???)

What bore/stroke/valve angle in all the Drakes???

Did Bignotti use 2.6" stroke in 22 deg engine?

AAR used the 2.650" stroke in their 19 deg. Were all AARs 19 deg?

Did anyone buy 22 deg after Indy 1976?

1.8 mpg mandated. Drake mileage about 1.6 mpg!!! AAR ran their engines at 75" of boost, or 870 hp at about 9,000 rpm for the Indy 500. But they would pull up to 1,200 hp at 10,000 rpm in qualifying (90"???)

Bignotti and Sonny Meyer also developed the Drake to about 1,200 hp for Patrick, and had similar problems. Given exclusive use until after Indy in 1976, they ordered a number of the new, 22 deg DGS engines for Patrick's (Riley-designed) Wildcats for the 1975 campaign.

**Sparks Goossen ...** was cast into the gear tower cover above the standard, 'Drake', giving rise to

**Drake**

the 'SGD' description.

The 22 deg engine was designed as 4.281" x 2.750, as was the later 19 deg engine, but many buyers went for the shorter stroke as available on the 36 deg engine. The 19 deg engine was rated at 800 hp at 9,000 rpm at the mandated 75" of boost

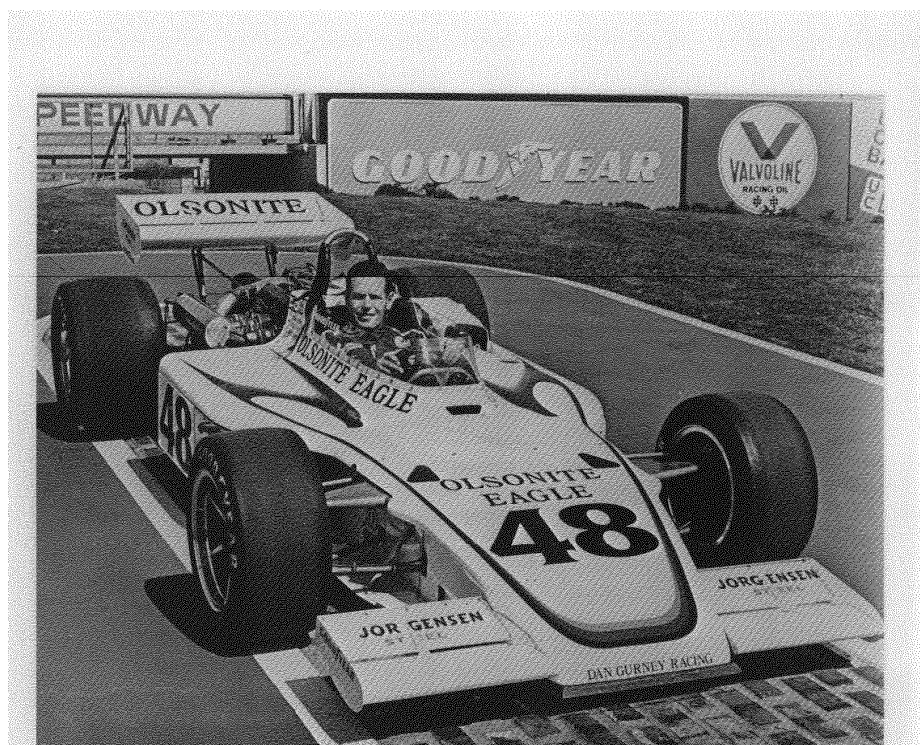
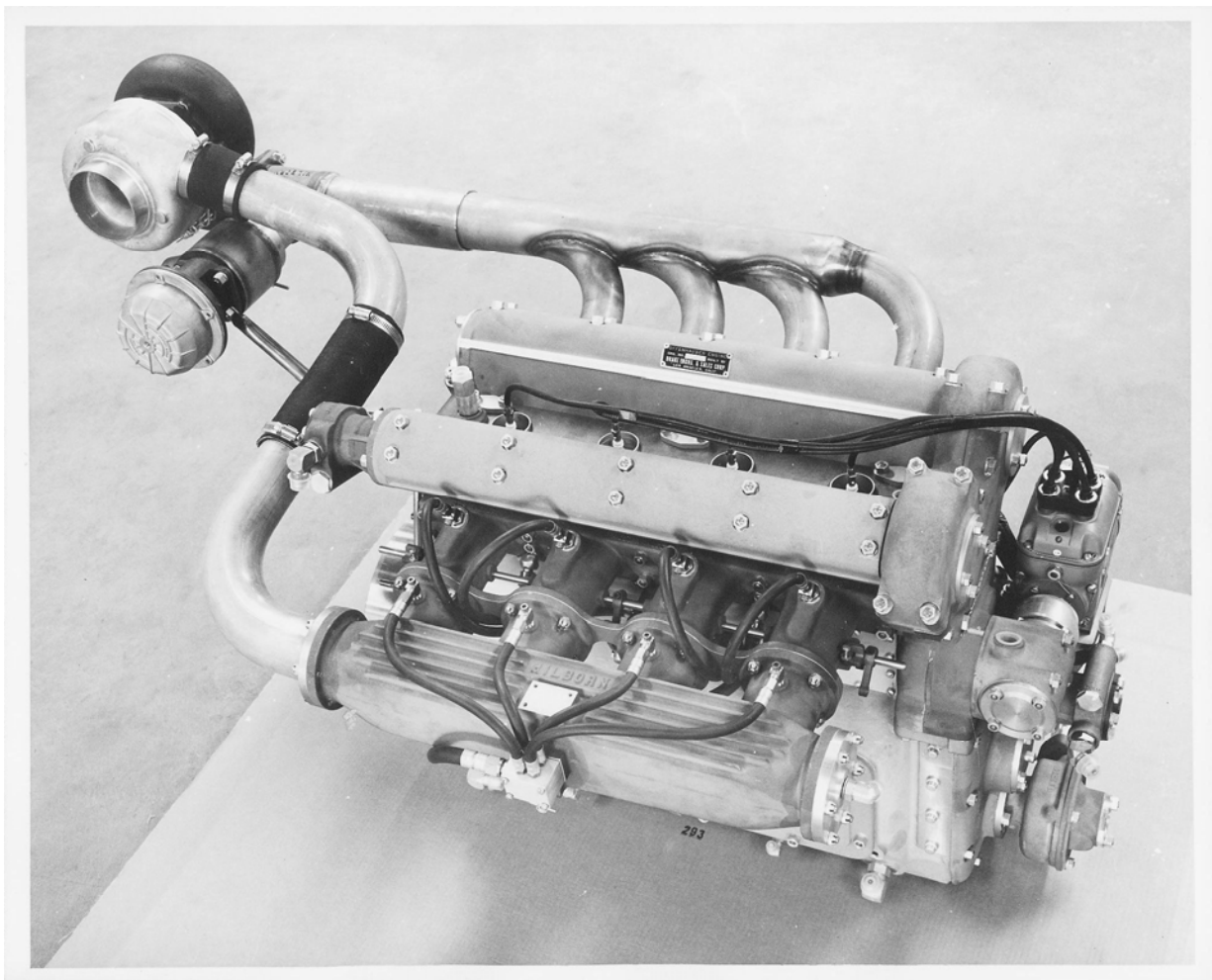
Leo William Goossen died on 4 December 1974 ...

Hans Hermann joined Drake and began to work on an engine for 1976 (Patrick team had an exclusive on the 22 deg engine until after Indy 1976). The new engine became the 19 deg engine, having a new valve angle, combustion chamber, exhaust ports, valve train actuation, and porting for better flow to, and over the intake valves. A higher capacity water pump was used. Hermann retained the 4.281" x 2.750' stroke. AAR called for the 2.650" stroke and made other modifications. John Miller told Ken Walton that the 19 deg engine only produced 1,100 hp at 9,800 rpm at 105" of boost! But they could produce 1.8 mpg at Indy!

March 3, 1974 ... Ontario 100 ... AJ Q1, wins in Coyote-Ford. Dick Simon drives the other Foyt into 8<sup>th</sup>.

March 3 ... Ontario 100, second heat ... **Johnny Rutherford Q1, wins in McLaren-Drake.** George Snider and John Cannon are in the field in Foyts.

March 10 ... Ontario 500 ... **Bobby Unser Q3, wins in Eagle-Drake.** Four Foyts in field.



Bobby Unser in the winner's circle at the Ontario Motor Speedway—where he won the 1974 California 500.

March 17 ... Phoenix 150 ... **Mike Mosley Q19, wins in Eagle-Drake.** AJ is 3<sup>rd</sup> with Dick Simon and John Cannon in the field.

April 7 ... Trenton 200 ... **Bobby Unser Q5, wins in Eagle-Drake.** John Cannon DNS the only Foyt. AJ hit the wall in practice and DNS.

**May 26 ... Indianapolis 500 ... Johnny Rutherford Q25 at 190.446, wins in McLaren-Drake.**



AJ Q1 at 191.632 and finished 15<sup>th</sup> with broken oil-line. Bob Harkey and Rick Muther joined Dick Simon and George Snider in the field with Foyts. Harkey finishing 8<sup>th</sup>.

**#3 McLaren**

**McLaren-Drake159 Offy Johnny Rutherford**

**Q25@190.446 WIN**



Wally Dallenbach Q2 189.683 Eagle ... Drake took 9 of 10 top finishes, 7 Eagles, 2 McLarens,  
 Mike Hiss Q3 187.490 McLaren  
 Johncock Q4 186.287 Eagle  
 Mario Q5 186.027 Eagle  
 Mike Mosley Q6 185.319 Eagle  
 Bobby Unser Q7 185.176 Eagle  
 Tom Sneva Q8 185.149 Kingfish  
 David Hobbs Q9 184.833 McLaren



June 9 ... Milwaukee 150 ... **Johnny Rutherford Q2, wins in McLaren-Drake.** Dick Simon is 4<sup>th</sup> and AJ is 6<sup>th</sup>, with Jan Opperman 23<sup>rd</sup> in their Foyts.

June 30 ... Pocono 500 ... **Rutherford Q5, wins.** Eldon Rasmussen 9<sup>th</sup>, Lee Brayton, AJ and Dick Simon fill out the Foyt field.

July 21 ... Brooklyn, MI 200 ... **Bobby Q1, wins.** AJ, Sam Sessions and Simon in the field.

August 11 ... Milwaukee 200 ... **Johncock Q4, wins in Eagle-Drake.** AJ Q1 F2 in only Foyt.

September 15 ... Brooklyn 250 ... **Al Unser Q3, wins in Eagle-Drake.** Snider, Brayton, Rasmussen and AJ field the Foyts.

September 22 ... Trenton 150 ... AJ Q1, wins. Benny Rapp, in the other Foyt, does not.

September 22 ... Trenton 150 second heat ... **Bobby Q2, wins.** AJ Q1, F4, is only Foyt.

November 2 ... Phoenix 150 ... **Johncock Q4, wins in Eagle-Drake.** AJ Q4, F4 and Simon are only Foyts in field.

**Leo Goossen died in December 1974 ... but his engines live on ...**

**1975****Drake 6 wins ... Foyt 7**

Foyt is in 12 races, wins 7 poles, 7 races and 4,920 points for the championship.

Pat Patrick sponsored a Drake-Offy engine having the valves inclined at only 22 degrees off vertical (the standard had been 36 degrees for a long time.) This engine was known as the 'DGS' engine for Drake-Goossen-Sparks. Art Sparks had assisted George Bignotti in the development of pistons and may have been the originator of the idea to change the angle on the valves. The engine was exclusive to Patrick for 1975. Later others used the DGS engine. And Drake built some engines having valves only 19 degrees off vertical.

Five Drake-Offys won five races. Foyt won seven. Gordie Johncock won one in a Patrick Wildcat.

Boost limited to 80 in/Hg (about 40 pounds) (atmosphere is about 15 pounds) Fuel limited ...cars required to make 1.8 mpg due to limitations on maximum fuel supply allowed for the race and tank size. Drake-Offy engines had been running at 100 in/Hg, but they burned a lot of fuel (which is OK when you're winning).

The Ford/Cosworth became more competitive with these new restrictions on Drake-Offy performance. Racing politics overcame the Racer's Edge and unabridged power!

March 2, 1975 ... Ontario 100 ... AJ Q1, wins in only Foyt. Johncock debuts DGS, Q5, F5.

March 2 ... Ontario 100 second heat ... **Wally Dallenbach Q3, wins in Eagle-Drake.** Rasmussen 7<sup>th</sup>, Brayton in field, in Foyts.

March 9 ... Ontario 500 ... AJ Q1, wins. Rasmussen 9<sup>th</sup>, Brayton and Muther also in Foyts.

March 16 ... Phoenix 150 ... **Rutherford Q2, wins in McLaren-Drake.** AJ Q3, F3 along with Dick Simon in Foyts.

April 6 ... Trenton 200 ... AJ Q10, wins. Simon 8<sup>th</sup>.

**May 25 ... Indianapolis 500 ...** Bobby Unser Q3 at 191.073, wins. AJ Q1 at 193.976, F3. Simon and Rasmussen in field.

<b>#8</b>	<b>Eagle-Drake159</b>	<b>Bobby Unser</b>	<b>Q3@191.073</b>	<b>WIN</b>
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Drake took 9 of 10 top finishes, 5 Eagles, 2 McLaren, 1 DGS Wildcat (9<sup>th</sup>)

Johncock Q2 191.652 DGS Patrick Wildcat ...

Bobby Unser Q3 191.073 Eagle (36 deg engine)

T Snea Q4 190.094 McLaren

Mosley Q5 187.822 Eagle

Ruby Q6 186.984 McLaren

JR Q7 185.998 McLaren

B Vukovich Q8 185.845 Eagle

Walther Q9 185.701 McLaren

Caruthers Q10 185.615 Eagle

June 8 ... Milwaukee 150 ... AJ Q1, wins. Simon and Mel Cornett in field in Foyts.

June 29 ... Pocono 500 ... AJ Q2, wins. Foyt and Rasmussen in field.

July 20 ... Brooklyn, MI 200 ... AJ Q1, wins. Simon 9<sup>th</sup>.

August 17 ... Milwaukee 200 ... **Mike Mosley Q6, wins in Eagle-Drake.** Rasmussen, Simon and Foyt in field.

September 13 ... Brooklyn, MI 150 ... **Tom Sneva Q7, wins in McLaren-Drake.** Foyt is 7<sup>th</sup>, Rasmussen and Simon are in the field.

September 21 ... Trenton 150 ... **Johncock Q3, wins in Patrick Wildcat-DGS.** AJ Q1, F2, Simon is in the field in the other Foyt.

November 9 ... Phoenix 150 ... AJ Q5, wins. Simon and Rasmussen are in the other two Foyts.

**1976**

**Drake 8 wins** ... Foyt nil ... Cosworth 3 (by PJ)

Drakes won six races. Johncock won two in the Wildcat. Foyt won two. Cosworth showed up in Parnellis driven by Al Unser and won three.

Vels-Parnelli bring in the Ford-Cosworth from England

AJ in 11 races, 7 poles, 2 wins ... 1,720 points

The 19 deg had 100 hp over the DGS according to Hans Hermann. Why weren't they more successful in 1977 and 78???

According to Ken Walton the 19 deg engine won seven races in 1976, its first year ... DGS won 2 according to IndyCar 1992 media guide ... my data shows two DGS wins ...

B Unser ... Cobre Eagle ... Phoenix 14 March

JR ... Hy-Gain McLaren ... Trenton 2 May

JR ... Hy-Gain McLaren ... Indy 30 May ... 500 miles

Mosely ... SugarRipe Eagle ... Milwaukee 13 June

J'cock ... Patrick Wildcat ... Michigan 18 July **DGS**

J'cock ... Patrick Wildcat ... Trenton 15 August **DGS**

B Unser ... Cobre Eagle ... Ontario 5 September ... 500 miles ... JR was 2<sup>nd</sup>

JR ... Hy-Gain McLaren ... College Station 31 October

March 14, 1976 ... Phoenix 150 ... **Bobby Unser Q2, wins in the Cobre Tire Eagle-Drake** 19 deg engine. Al Unser Q1, F4 in Parnelli-Cosworth behind Gordon Johncock in a Wildcat 2-DGS. Mike Mosley Q7, is 5<sup>th</sup> in the Sugar-ripe Eagle-Drake 19 deg. Johnny Rutherford in the McLaren McLaren-Drake 19 deg Q6, F18. AJ Q3, F21 in only Foyt, lost oil pressure.

May 2 ... Trenton 200 ... **Johnny Rutherford Q2, wins in McLaren-Drake** 19 deg, followed by Johncock in the DGS. AJ Q1, F18, engine, along with Tom Frantz and Simon in the other two Foyts.

**May 30 ... Indianapolis 500** ... Johnny Rutherford Q1, wins in McLaren/Drake 19 deg. AJ Q5, F2, then Johncock Q2, and Dallenbach Q7, in DGSs.

**#2 McLaren McLaren-Drake159 Johnny Rutherford Q1@188.957 WIN**

JR Q1 188.957 McLaren (19 deg in 1<sup>st</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>) ... Drake took 8 of

10 top finishes, 2 Eagles, 4 McLarens, 2 DGS Wildcats (3<sup>rd</sup> and 4<sup>th</sup>, 22 deg)

Johncock Q3 188.531 DGS Wildcat

Carter Q6 184.824 Eagle

Dallenbach Q7 184.455 DGS Wildcat

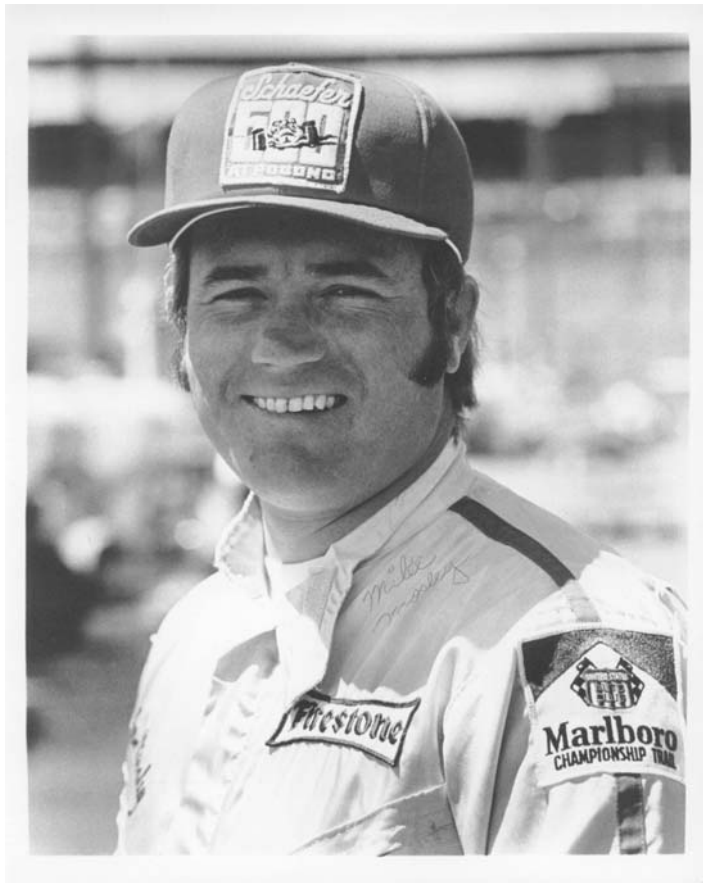
G Bettenhausen Q8 181.791 Eagle

B Vukovich Q9 181.433 Eagle

Cannon Q10 181.388 Eagle

June 13 ... Milwaukee 150 ... **Mike Mosley Q2, wins in Eagle-Drake** 19 deg. Johncock Q1 F2 in DGS. Simon and AJ are in the field in Foyts.





June 27 ... Pocono 500 ... Al Unser Q16, wins in Parnelli-Cosworth. Mosley Q6, F2. Larry Dickson and AJ bring home the Foyts in 11<sup>th</sup> and 31<sup>st</sup>.

July 16 ... Brooklyn, MI 200 ... **Johncock Q2, wins in Wildcat-DGS**. AJ Q1, F2. Rasmussen is 17<sup>th</sup>.

August 1 ... College Station, Texas 150 ... AJ Q1, wins.

August 15 ... Trenton 200 ... **Johncock Q2, wins in Wildcat-DGS**. AJ and Roger Rager bring home the Foyts in 19<sup>th</sup> and 20<sup>th</sup>.

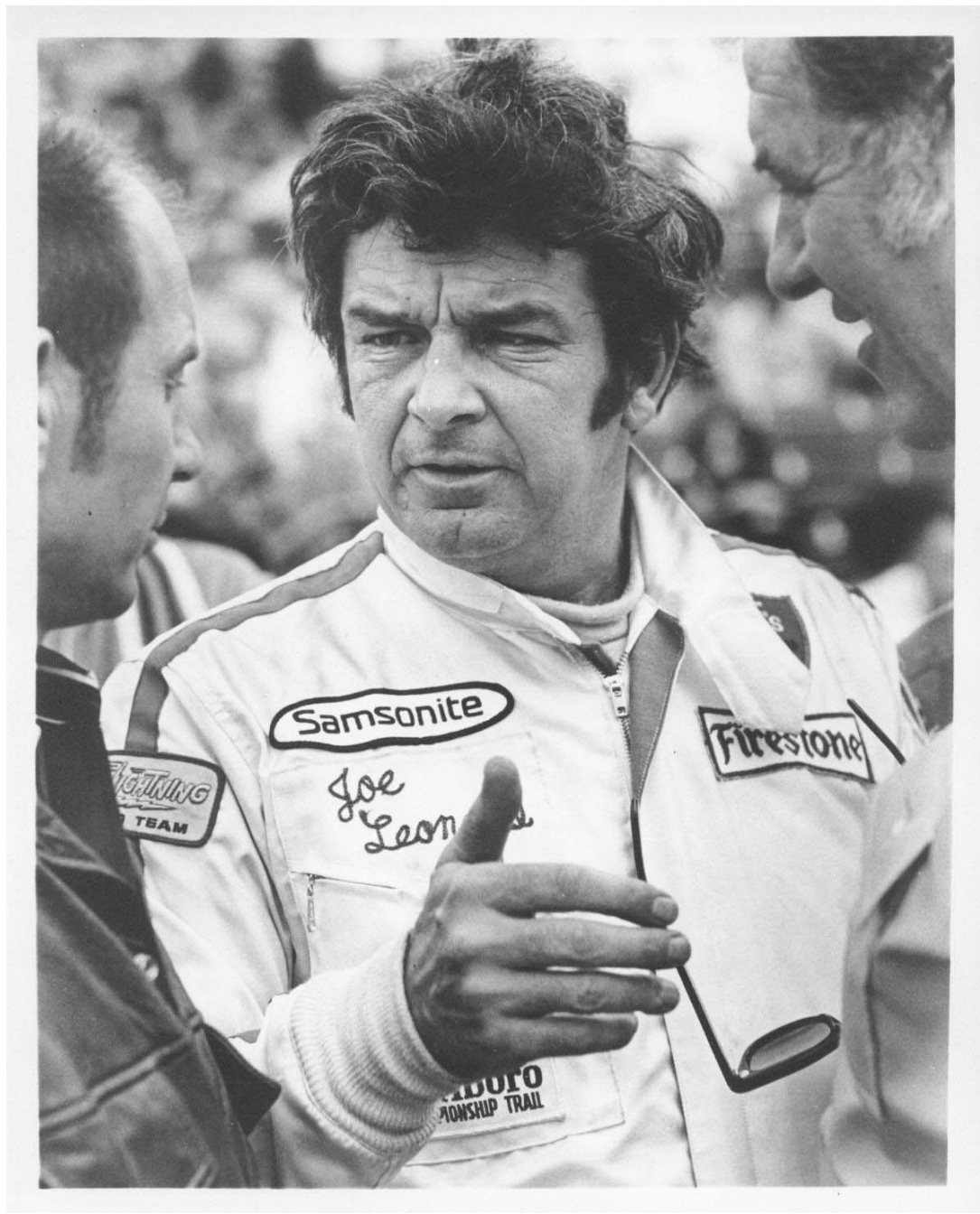
August 22 ... Milwaukee 200 ... Al Unser Q5, wins in Parnelli-Cosworth. Roger Rager is 10<sup>th</sup> in Foyt.

September 5 ... Ontario 500 ... Bobby **Unser Q10, wins in Eagle-Drake** 19 deg.. Rutherford Q7, F2. Rager, AJ, Simon and Kenyon are in the field.

September 18 ... Brooklyn, MI 150 ... AJ Q1, wins. Rager and Rasmussen are in the other two Foyts.

October 31 ... College Station, Texas 200 ... **Rutherford Q6, wins in McLaren-Drake** 19 deg. AJ Q1, F11.

November 7 ... Phoenix 150 ... Al Unser Q10, wins in Parnelli-Cosworth. No Foyts.



**1977**

**Drake 3 wins** ... DGS Wildcats won three ... Foyt 3 ... Cosworth 8, they were taking over.

1977 FOYT WINS INDY AND 2 OTHERS. DGS WINS 3. COSWORTH WINS 8

The design of the Drake DT160 V8 was begun. I don't have its race record. Who was sponsor? What car nbr? John said engine was to be ready for Indy 1979. John Drake had gone on to develop a V8 engine to meet the competition. It was not successful and they stopped building engines in 1969. John continued to build parts until 2002 when he sold the business to Stewart Van Dyne.

March 6, 1977 ... Ontario 200 ... AJ Q6, wins. Four Drake DGSs and about 17 Drake TCs are in the field.

March 27 ... Phoenix 150 ... Johnny Rutherford Q1, wins in McLaren-Cosworth. Foyt is 2<sup>nd</sup>. With large field of Drake DGS and TCs.

April 2 ... College Station, Texas 200 ... Tom Sneva Q8, wins in McLaren-Coworth. Only two DGS in field with a number of TCs.

April 30 ... Trenton 200 ... **Wally Dallenbach Q7, wins in Patrick Wildcat-Drake DGS.** Johncock is 2<sup>nd</sup> in another Wildcat-Drake DGS.

May 29 ... Indianapolis 500 ... AJ Q4, wins. Wildcat-Drake DGSs in 4<sup>th</sup> and 5<sup>th</sup>. Only four Cosworths in field.

#14 Coyote	Foyt 161 (Ford)	AJ Foyt	Q4@194.563	WIN
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Drake took 7 of 10 top finishes, 2 Eagles, 2 McLarens, 3 DGS Wildcats (4<sup>th</sup>, 5<sup>th</sup> and 11<sup>th</sup>)

Johncock Q5 193.517 Wildcat DGS ...

Mario Q6 193.351 McLaren

Carter Q8 192.452 Eagle

Mosley Q9 190.069 Lightning

Dallenbach Q10 DGS Wildcat

Parsons Q11 DGS Wildcat

June 12 ... Milwaukee 150 ... Johnny Rutherford Q2, wins, followed by two other Cosworths.

June 26 ... Pocono 500 ... Tom Sneva Q4, wins in McLaren-Cosworth. Mario is second in another, followed by two Wildcat DGSs. Mostly Drakes in field.

July 3 ... Mosport 300KM ... AJ Q7, wins. Mostly Drakes in field.

July 17 ... Brooklyn, MI ... Danny Ongais Q4, wins in Parnelli-Cosworth. Wildcat-Drake DGS is second. Mostly Drakes in field.

July 31 ... College Station, Texas 200 ... Johnny Rutherford Q2, wins in McLaren-Cosworth. Wildcat-Drake DGS is second. Mostly Drakes in field.

August 21 ... Milwaukee 200 ... Johnny Rutherford Q3, wins in McLaren-Cosworth. Mostly Drakes ...

September 4 ... Ontario 500 ... Al Unser Q3, wins in Parnelli-Cosworth. AJ is second. Mostly Drakes ...

September 17 ... Brooklyn, MI 150 ... Gordon Johncock Q7, wins in Patrick Wildcat-Drake DGS. Still only five Cosworth in field.

October 29 ... Phoenix 150 ... Johncock Q6, wins. Same field.

## Now, for the first time, Formula 1 Grand Prix technology is available for the small-block Chevrolet.

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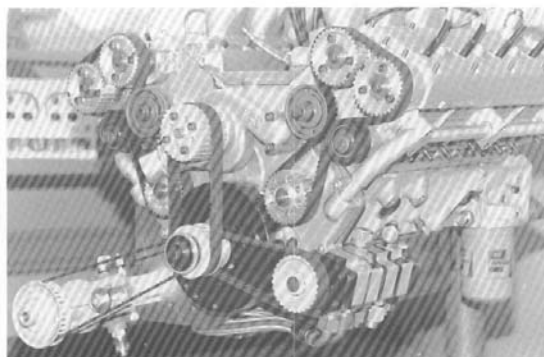
John Drake (left), president Drake Engineering Company, with a 220 CID version of the immortal Drake 'Offy.' Hans Hermann (right), president, Hans Hermann Engineering with the new H-D-O Thunder SP 651.

also get sound engine  
operating life and comp  
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The heart of this Har  
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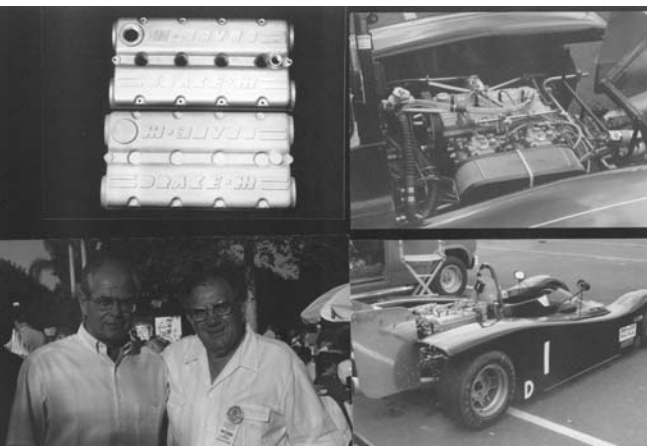
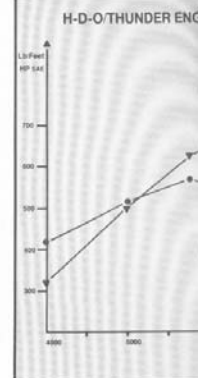


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No more pushrods to bend! Simple drive for four overhead cams, four-valves-per-cylinder features geared primary, Goodyear-belt secondary drive. Also shown: H-D-O high-volume water pump; dry sump oil pump.

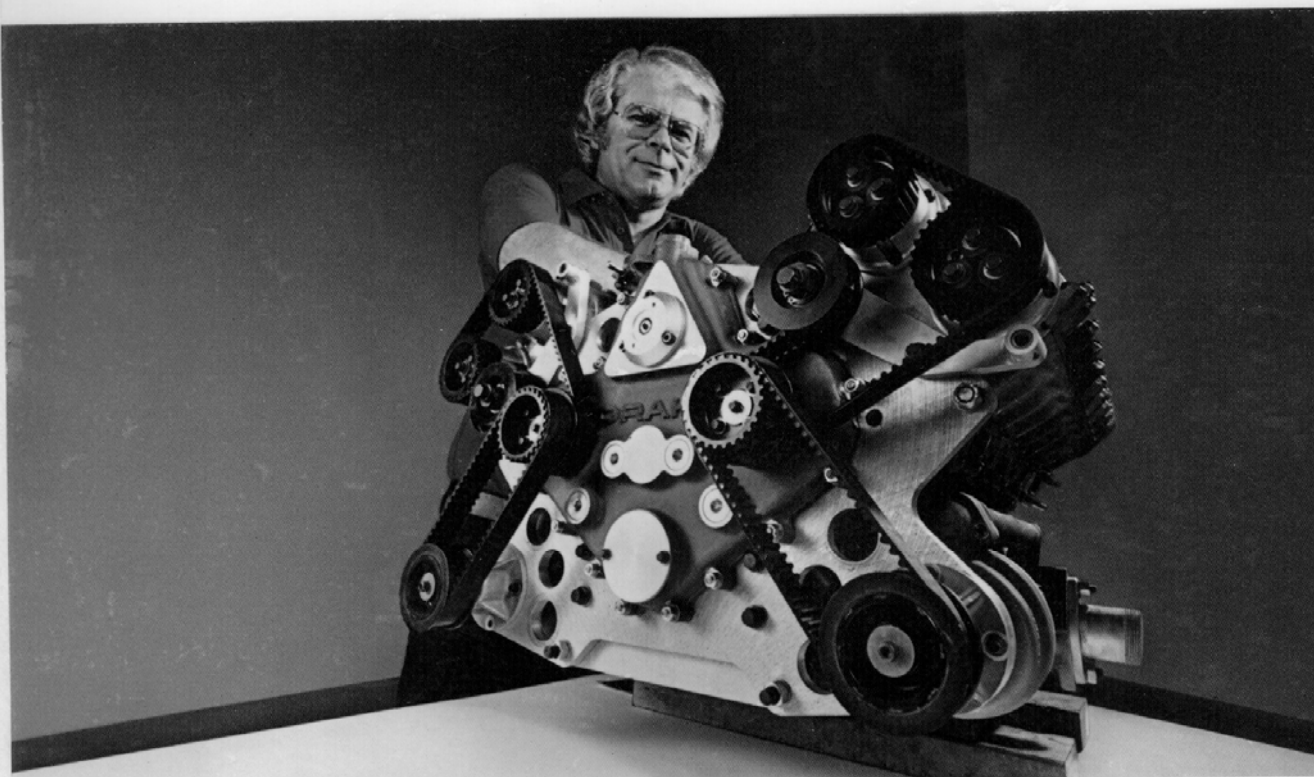
### TORQUE & HORSEPOWER



The Patrick team was involved in the development of the Drake V-8. It was an unsuccessful attempt at another heroic rescue of the racing engine dynasty.



# Goodyear designers helped this engine-maker develop a new way to drive race cars.



John Drake, President Drake Engineering



Most race car engines use gears to drive cams, water and oil pumps. The Drake engine is different.

It uses four Goodyear Super Torque PD™ belts to drive four overhead cams, water and oil pumps. In one of

its first outings on the Lindsey-Hopkins Indy type car, it came in fifth in time trials and second in the race, only 3 seconds behind the winner. The belt system was developed by Goodyear drive designers working with Drake engineers. Drake engineers were close to abandoning the drive belt project because of repeated failures with another belt system. Then the Goodyear engineers stepped in with new Super Torque PD belts, and the Drake engine was off to the races.

The unique tooth design in the Super Torque PD belts and matching pulleys helps achieve up to 70% more horsepower than conventional belts, making the system ideal for replacing many chain drives and for a wide range of drives. Examples: snowmobiles, typewriters, motorcycles, machine tool grinders, paper mill repulpers, hay conditioners, trash compactors. If you have a drive you'd like to save space, weight and money on, or an engine to race, write Goodyear, Box 52, Akron, OH 44309.

**We know how to help.**

**GOODYEAR**  
INDUSTRIAL PRODUCTS

John Drake and Drake V8  
It was built to beat the Ford-Cosworth  
But was beaten by new rules  
It was the end of the Miller/Offenhauser/Meyer&Drake/Drake-Offy engine line

Pr III—Thurs., Feb. 16, 1978 Los Angeles Times

## MOTOR RACING

## Bignotti Switches to V8 Drake Offies

BY SHAV GLICK

Times Staff Writer

Most of the racing world will be in Daytona this week for the final leg of the International Race of Champions and the \$450,000 Daytona 500 Sunday, but not far away is the opening race of the U.S. Auto Club's championship trail at Ontario.

The Datsun Twin 200 March 5 will provide an insight into what to expect for this year's Indianapolis 500. And watched closely will be the debut of the new V8 Drake Offenhauser in George Bignotti's two STP Wildcats.

Bignotti, who has prepared Indy-winning 4-cylinder engines for A. J. Foyt in 1961 and '64 and Gordon Johncock in 1973, says he moved to V8 power reluctantly—but through necessity. Racing at the Indianapolis level has become more than just horsepower and speed. It's also how much fuel you use.

"If they'd just give us more fuel," said Bignotti, "we'd run 'em with our

'4s.' An 8-cylinder engine is more efficient because you can run a leaner, hotter fuel-to-air mixture."

The V8 Drakes are being tested by Johncock and Steve Krisloff.

A. J. Foyt won last year's 500 with a V8 Ford engine so modified it is now called a Foyt, and Parnelli Jones and Vel Miletich pioneered use of the turbocharged Cosworth V8 from England that ran so well with Al Unser and Danny Ongais it started a stampede toward 8-cylinder engines.

This left Bignotti with about the only competitive 4-cylinder entries. When Drake built a new V8, Bignotti decided it was time to join the crowd.

The critical factor is mileage. To finish the Datsun Twin 200 or the Indy 500, a car must average no worse than 1.8 miles per gallon.

The old Drake 4-cylinders put out approximately 785 horsepower. By comparison, a Datsun 280Z, the pace car at Ontario, has a displacement of 168 cubic inches and produces 135

horsepower.

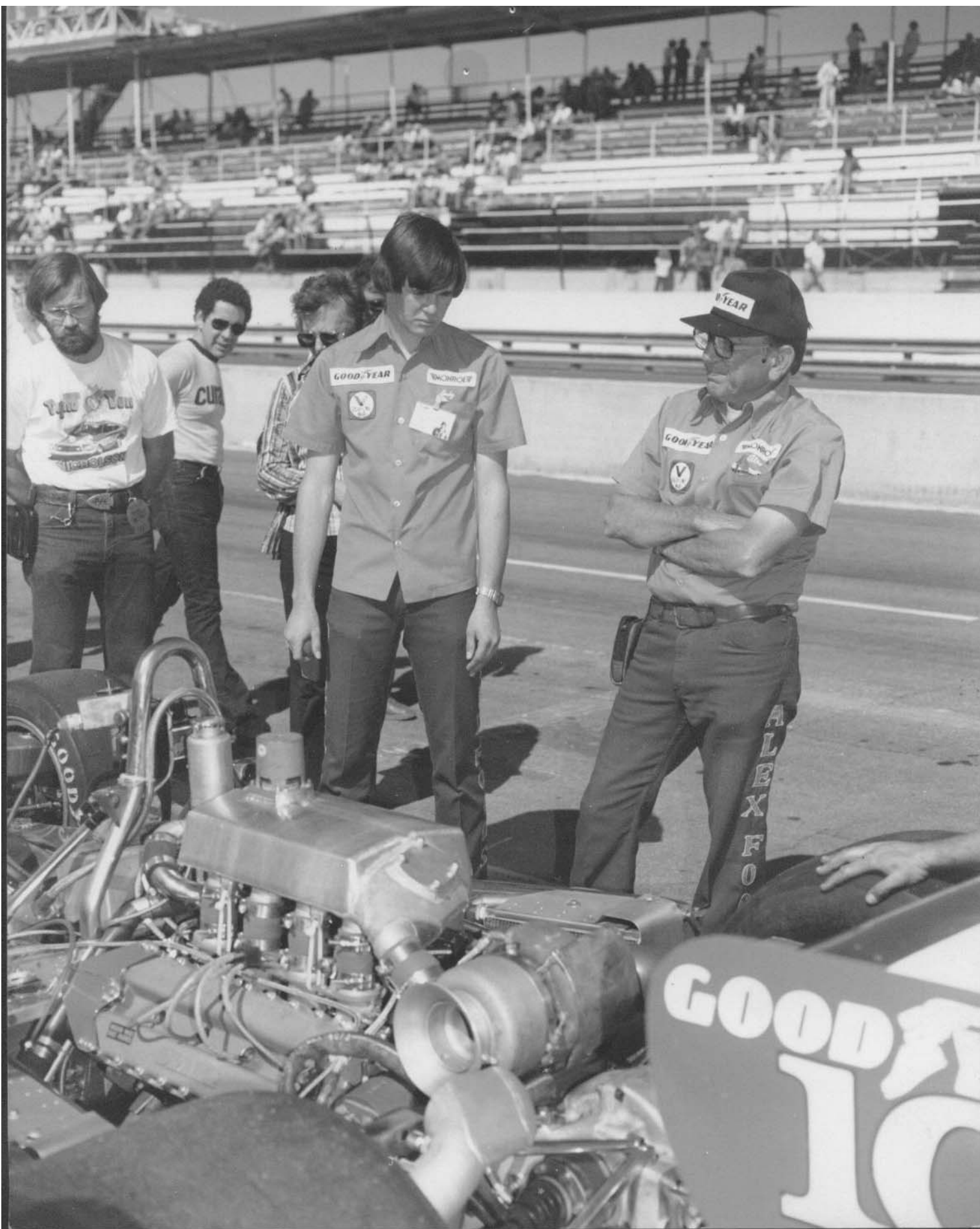
Hans Hermann, chief engineer at Drake, began drawing plans for the new engine in July 1976 when it became apparent that a switch to V8s was necessary.

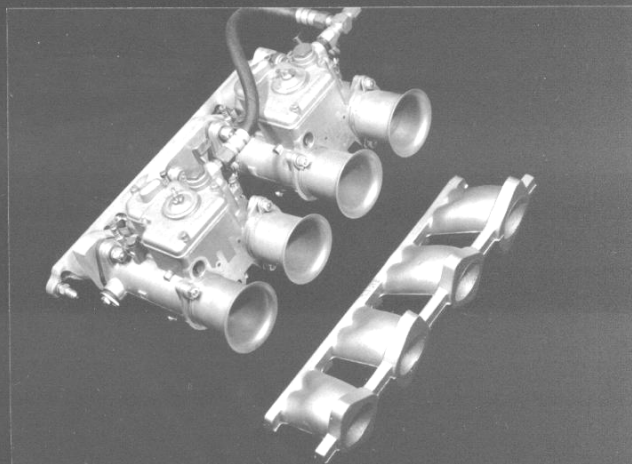
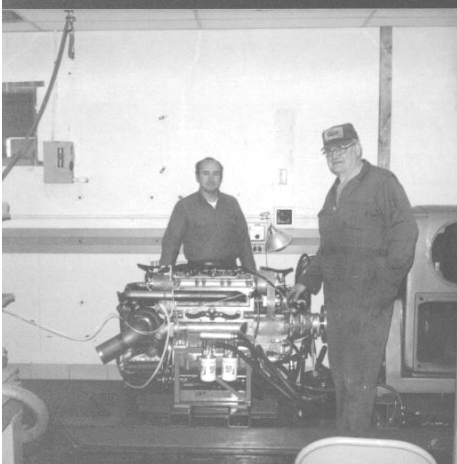
**IROC**—Stock car driver Benny Parsons, who missed qualifying for the final IROC race Friday at Daytona by less than a car length, gets a second chance. Parsons, one of the favorites for the Daytona 500, is replacing Gunnar Nilsson, who withdrew because of stomach cancer. Others in the IROC finale are point-leader Al Unser, Cale Yarborough, Richard Petty, Darrell Waltrip, Gordon Johncock, Johnny Ruth-erford, Mario Andretti and Jacky Ickx.

**MOTOCROSS**—Five-time world champion Roger DeCoster is recuperating in Belgium from the most serious injury of his career. DeCoster, 33, was riding with his former Suzuki teammate, Sylvain Geboers, when his motorcycle struck a hidden depression and flung him against a tree. DeCoster's spleen was ruptured in five places and his heart rate dropped hazardously before his condition stabilized. He was on the critical list for 24 hours.



It just didn't work out this time. Some say the Drake team went against the "popular knowledge" in their design. If so, it was because they had to take desperate measures to compete in a small shop against an industrial giant.







**1978**

**Drake 2 wins** ... DGS Wildcats won two. Foyt won two and Cosworth won the rest (14) including Indy.

CART is founded by Roger Penske and Pat Patrick

March 18, 1978 ... Phoenix 150 ... **Johncock Q2, wins in Wildcat-Drake DGS**, followed by Steve Krisiloff in another Wildcat-Drake DGS. Eight Cosworths in field.

March 26 ... Ontario 200 ... Danny Ongais Q4, wins in Parnelli-Cosworth. Mostly Drakes in field.

April 15 ... College Station, Texas 200 ... Danny Ongais Q1, wins. Mostly Drakes.

**April 23 ... Trenton ... Johncock Q4, wins in Patrick Wildcat-Drake DGS.**

May 28 ... Indianapolis 500 ... Al Unser Q5 at 196.474, wins in Lola-Cosworth. Johncock 4<sup>th</sup>, Krisiloff 5<sup>th</sup>. Mostly Drakes in field.

#2	Chaparral/161 Cosworth	Al Unser	Q5@196.474	WIN
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Drake took 4 of top 10 finishes, 1 Eagle, 3 DGS Wildcats (3<sup>rd</sup>, 4<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup>)  
 J'cock Q6 195.833 DGS Wildcat ...  
 Parsons Q8 194.280 Lightning  
 Simon Q10 192.967 Vollstedt  
 Krisiloff Q13 191.255 DGS Wildcat  
 Guthrie Q15 190.325 DGS Wildcat  
 Bigelow Q18 189.115 DGS Wildcat

June 11 ... Mosport 300KM ... Danny Ongais Q1, wins in Parnelli-Cosworth.

June 18 ... Milwaukee 150 ... Rick Mears Q3, wins in Penske-Cosworth.

June 25 ... Pocono 500 ... Al Unser Q10, wins in Chaparral-Cosworth. Ten Cosworths dominate field.

July 16 ... Brooklyn, MI 200 ... Johnny Rutherford Q2, wins in McLaren-Cosworth. They dominate.

July 23 ... Atlanta 150 ... Rick Mears Q3, wins. Cosworth dominates. DGS are competitive. So is Foyt.

August 6 ... College Station, Texas 200 ... AJ Q2, wins.

August 20 ... Milwaukee 200 ... Danny Ongais Q1, wins.

September 3 ... Ontario 500 ... Al Unser Q7, wins in Chaparral-Cosworth. DGS still competitive.

September 16 ... Brooklyn, MI 150 ... Danny Ongais Q20, wins. DGS competitive.

September 23 ... Trenton 150 ... Mario Q3, wins in Penske-Cosworth. Only one DGS in field.

October 1 ... Silverstone 150 road course ... AJ Q10, wins.

October 7 ... Brands Hatch 120 road course ... Mears Q2, wins. Cosworth dominates.

October 28 ... Phoenix 150 ... Rutherford Q3, wins in McLaren-Cosworth. Cosworth dominates.

**1979**

All races won by Cosworth up until 1987, when the Ilmor-Chevys showed up.

1979 Cosworth wins Indy and 19 others. Foyt wins 1. Drake nil. Patrick fields Cosworth-Wildcat for Gelhausen and a Cosworth-penske for Johncock

Drake V8 and Bignotti-Meyer flat six were unsuccessful due to fuel restrictions

Patrick puts Cosworth in Wildcats

March 11, 1979 ... Phoenix 150 ... Johncock Q8, wins in Penske-Cosworth. Cosworth dominates. Tom Frantz has only Drake DGS Q18, F14. A few Drake TCs finish.

March 25 ... Ontario 200 ... AJ Q1, wins in Parnelli-Cosworth, followed by seven Drakes in top ten. Only four Cosworths in field.

April 8 ... College Station, Texas 200 ... AJ Q1, wins in Coyote-Foyt (last win for Foyt engine?). Two Cosworth in field.

April 22 ... Atlanta 125 ... Rutherford Q1, wins in McLaren-Cosworth. Four Drakes in field.

April 22 ... Atlanta 125 second heat ... Rutherford Q1, wins. Cosworth dominates. Five Drakes in field.

May 28 ... Indianapolis 500 ... Rick Mears Q1 at 193.736, wins in Penske-Cosworth.

AJ Q6, F2 in Parnelli-Cosworth

Drake took 1 of 10 top finishes, Cosworth took 9

Howdy Holmes in Wildcat-Drake Q13, F7. Billy Vukovich Q34, F8 in Watson-Drake. Johnny Parsons Q9, F32 in Lightning-DGS (V8?) ... there were a few other Drakes in the field.

Parsons Q9 187.813 Lightning ...

Kinser Q10 186.674 Watson

June 10 ... Milwaukee 150 ... AJ Q1, wins in Parnelli-Cosworth. Billy Vukovich Q4, F2 in Watson-Drake. Cliff Hucul Q9, F7 in McLaren-Drake. Dana Carter Q7, F11 in McLaren-Drake.

June 10 ... Trenton 100 ... Bobby Unser Q2, wins in Penske-Cosworth. John Mahler Q15, F11 in Drake DGS.

June 10 ... Trenton 100 second heat ... Bobby Q1, wins. John Mahler Q11, F11 in Intercomp Bea-Drake DGS.

June 24 ... Pocono 500 ... AJ Q1, wins in Parnelli-Cosworth. Jim McElreath Q13, F2 in Eagle-Drake. Drakes F4, 5, 6 and 7 (DGS). Johnny Parsons Q3, F21 in Drake (V8?). George Snider in V8 also???

July 15 ... Brooklyn, MI 125 ... Johncock Q3, wins in Penske-Cosworth. Pancho Carter Q12, F7 in Drake (V8?). Several other Drakes and two DGSs in field.

July 15 ... Brooklyn, MI 125 second heat ... Bobby Unser Q18, wins in Penske-Cosworth. Several Drakes qualify well. Mahler, and Frantz Drake V8s in field ???

August 5 ... College Station, Texas 200 ... AJ Q1, wins in Parnelli-Cosworth. Five Drakes in top ten finishers.

August 5 ... Watkins Glen 150 road course ... Bobby Unser Q2, wins in Penske-Cosworth. Three Drakes in top ten.

August 12 ... Milwaukee 200 ... Roger McCluskey Q3, wins in Lola-Cosworth. Six Drakes in top ten.

August 19 ... Trenton 150 ... Rick Mears Q5, wins in Penske-Cosworth. Two Drakes in top ten.

September 2 ... Ontario 500 ... Bobby Unser Q3, wins in Penske-Cosworth. Vern Schuppan Q30, F7 in Wildcat-Drake DGS. About a dozen other Drakes in field.

September 15 ... Brooklyn, MI 150 ... Bobby Q1, wins. Four Drakes in field, two are DGSs.

September 30 ... Atlanta 150 ... Rick Mears Q2, wins in Penske-Cosworth. Six Drakes in field.

October 20 ... Phoenix 150 ... Al Unser Q2, wins in Chaparral-Cosworth.  
Wally Dallenbach Q3, F12.

John Drake went on to develop a V8 engine to meet the competition. It was not successful and they stopped building engines in 1979. John continued to build specialty racing parts until 2002 when he sold the business to Stewart Van Dyne.



**1980**

1980 Cosworth wins Indy and 11 others. Foyt nil. Drake nil (Gary Bettenhausen finished 3<sup>rd</sup> at Indy in the Armstrong Mould DGS WildcatII). Patrick puts Johncock in Cosworth-Penske, Smiley in a Cosworth-Phoenix, and Bagley in a Cosworth-Wildcat

April 13, 1980 ... Ontario 200 ... Johnny Rutherford Q1, wins in Chaparral-Cosworth. Seven Drakes in field.

May 26 ... Indianapolis 500 ... Johnny Ruthrford Q1 at 192.526, wins.  
 Drake took 1 of top ten finishes, G Bettenhausen 3<sup>rd</sup> in Armstrong Mold DGS Wildcat II  
 Gary Bettenhausen Q32 at 182.463, F3. in Wildcat DGS.  
 Billy Vukovich Q30 at 182.741, F12 in Watson-Drake.  
 Dick Simon Q29 At 182.788, F22 in Vollstedt-Drake.  
 Johnny Parsons Q7 at 187.412, F26 in Lightning-Drake.  
 Larry Cannon Q14 at 183.253, F33 in Wildcat DGS.

June 8 ... Milwaukee 150 ... Bobby Unser Q5, wins in Penske-Cosworth.

June 22 ... Pocono 500 ... Bobby Q1, wins. Vern Schuppan Q27, F4 in Wildcat DGS.

July 13 ... Lexington 156 ... Rutherford Q4, wins in Chaparral-Cosworth. Schuppan Q12, F5 in Wildcat DGS. Two other DGSs and a few TCs in the field.

July 20 ... Brooklyn, MI 200 ... Rutherford Q2, wins. Gary Bettenhausen Q15, F9 in Wildcat DGS.

August 3 ... Watkins Glen 150 road course ... Bobby Unser Q3, wins in Penske-Cosworth.

August 10 ... Milwaukee 200 ... Rutherford Q1, wins in Chaparral-Cosworth. Dick Simon Q25, F7 in Vollstedt-Drake.

August 31 ... Ontario 500 ... Bobby Unser Q1, wins in Penske-Cosworth. Cosworth dominates.

September 20 ... Brooklyn, MI 150 ... Mario Q1, wins in Penske-Cosworth. Cosworth dominates.

October 26 ... Mexico City 150 ... Rick Mears Q2, wins in Penske-Cosworth. Jim McElreath Q19, F6 in Eagle-Drake. Larry Cannon Q29, F9 in Wildcat DGS.

November 8 ... Phoenix 150 ... Tom Sneva Q6, wins in Phoenix-Cosworth. Herm Johnson QQ18, F8 in Lightning-Drake. Billy Vukovich Q8, F12 in Eagle-Drake.



# DRAKE ENGINEERING & SALES CORP.

2001 WEST GAGE AVENUE  
LOS ANGELES, CALIFORNIA 90047

*Builders of Racing Engines*

PHONE (213) 758-9090

**OFFY**

PHONE (213) 759-6879

June 17, 1968

In conjunction with the Sales Contract dated May 15th, 1946, between myself and Dale Drake Machine Corporation, I wish to further state that DRAKE ENGINEERING & SALES CORP shall also have the right to use the name of "OFFENHAUSER" on such engines and parts as they may manufacture for or sell to any future purchaser; and further that any future purchaser shall have the right to use the name of "OFFENHAUSER" on their engines and parts.

Signed:

*Fred Offenhausor*  
Fred Offenhausor

Wittnessed:

*Dale Drake*  
Dale Drake

*Eva Louise Drake*  
Eva Louise Drake

*Leo Goossen*  
Leo Goossen

## STEPHEN GRUBB

ATTORNEY AT LAW

714 WEST OLYMPIC BOULEVARD  
LOS ANGELES, CALIFORNIA 90015  
(213) 749-5497

TRADEMARKS  
COPYRIGHTS  
UNFAIR TRADE CAUSES

April 29, 1974

Drake Engineering & Sales Corp.  
17502 Daimler Street  
Santa Ana, California 92705

Attention: Mr. John D. Drake, President

Re: Sections 8 and 15 Affidavit for "OFFY,"  
Reg. No. 855,524, Dated Aug. 27, 1968

Dear Mr. Drake:

I am pleased to enclose United States Patent Office receipt in acknowledgment of the Sections 8 and 15 Affidavit having been filed relating to the following identified registration:

"OFFY" Registration No. 855,524

I suggest that this receipt be placed with the Certificate of Registration to which it pertains.

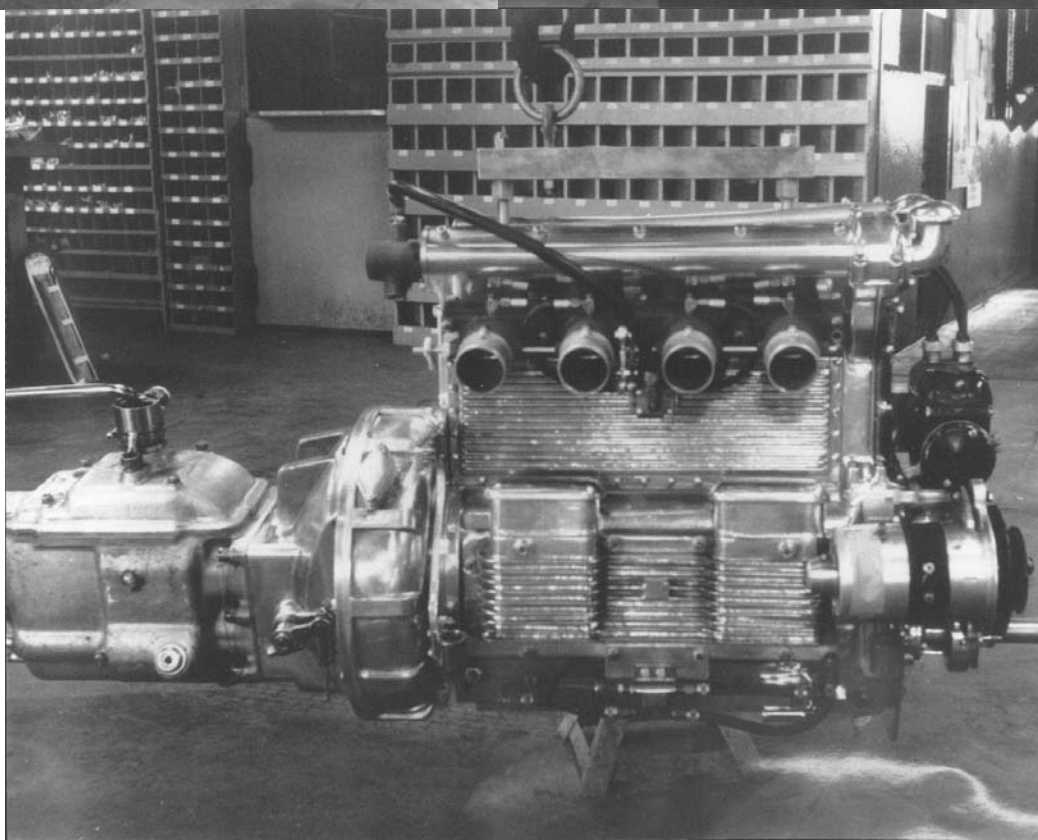
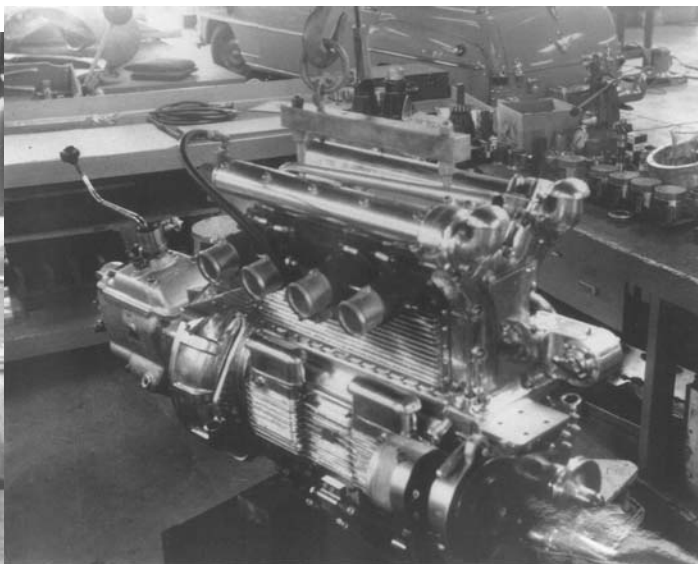
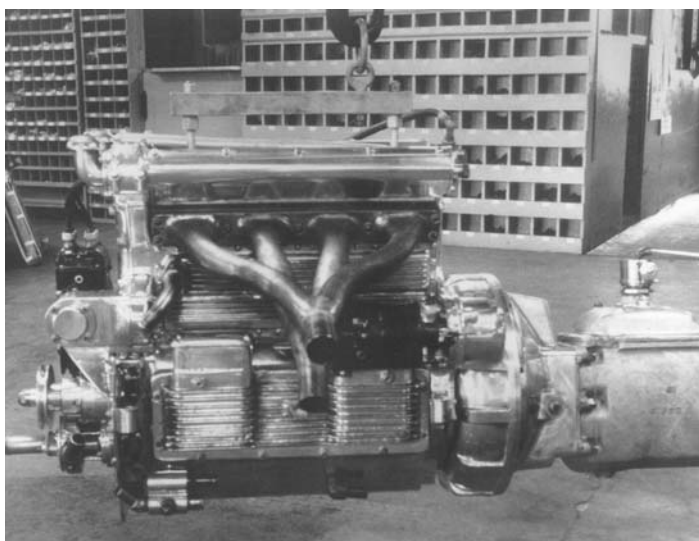
Sincerely yours,



Stephen Grubb

SG:jw  
Enc.

MILLER FALLS  
ERASE



**BEEHLER, ARANT, MOCKABEE, JAGGER & BETHEL**

PATENT AND TRADEMARK LAWYERS EXCLUSIVELY

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P. K. BETHEL  
REG. PAT. AGENT  
JOHN T. MATLAGO  
OF COUNSEL  
LARRY F. GITLIN

February 15, 1977

Offenhauser Engineering  
5300 Alhambra Avenue  
Los Angeles, California 90032

Gentlemen:

We represent Drake Engineering and Sales Corp.

We have noticed that recently you have been using the language "OFFY" in conjunction with your decals.

OFFY is a registered trademark bearing U.S. registration No. 855,524 and is dated August 27, 1968. A Section 8 and 15 affidavit for the mark OFFY has been filed under the Lanham Act and would therefore make the mark OFFY incontestable. Thus, it stands as the sole right and property of Drake Engineering and Sales Corp.

We are at a loss to determine why you have used the mark OFFY in your sales literature and on your products, when it would be an infringement of the rights of Drake Engineering and Sales Corp. Our assumption is that you used it inadvertently, or did not realize that the rights thereto exist with Drake Engineering and Sales Corp.

As a consequence of the foregoing, we must ask that you cease and desist from any further illegal use of our client's mark OFFY. Along this line, we can understand that an immediate cessation and non-use of the mark would possibly disrupt your business. It



**1981**

March 22, 1981 ... Phoenix 150 ... Johnny Rutherford Q3, wins in Chaparral-Cosworth. Only four Drakes in field.

May 24 ... Indianapolis 500 ... Bobby Unser Q1 at 200.545, wins in Penske-Cosworth. No Drakes in field, several DNQ.

June 7 ... Milwaukee 150 ... Mike Mosley Q25, wins in Eagle-Chevy. Three Drakes in field.

June 14 ... Pocono 500 ... AJ Q1, wins in Coyote-Cosworth. Billy Vukovich Q7, F6 in Watson Drake. Four other Drakes in field. Jerry Sneva Q10, F25 in his.

June 21 ... Atlanta 150 ... Rick Mears Q7, wins in Penske-Cosworth. No Drakes in field.

June 21 ... Atlanta 150 second heat ... Mears Q1, wins. Herm Johnson and Cannon (Q11) make the field.

July 25 ... Brooklyn, MI 500 ... Pancho Carter Q4, wins in Penske-Cosworth. Three Drakes in field.

August 30 ... Riverside 500KM road course ... Rick Mears Q3, wins. John Mahler Q28, F27 is only Drake, in a Penske.

September 5 ... Milwaukee 200 ... Tom Sneva Q3, wins in March-Cosworth. Mahler and Simon have Drakes.

September 20 ... Brooklyn, MI 148 ... Mears Q1, wins. Four Drakes in field.

October 4 ... Watkins Glen 200 road course ... Mears Q3, wins. Ross Davis has Wildcat-Drake.

October 18 ... Mexico City 150 ... Mears Q6, wins. McElreath, Jourdain and Billy V have Drakes.

October 31 ... Phoenix 150 ... Tom Sneva Q5, wins in March-Cosworth. Two Drakes in field.

**1982**

March 28, 1982 ... Rick Mears Q1, wins in Penske-Cosworth. No Drakes (ND) in field. Al Loquasto DNQ Eagle/Drake.

May 29 ... Indianapolis 500 ... Gordon Johncock Q5 at 201.884, wins in Wildcat88-Cosworth. ND. Four Drakes DNQ.

July 18 ... Brooklyn, MI 500 ... Johncock Q2, wins in Wildcat88-Cosworth. Mario F2 in Wildcat88-Cosworth. Ken Hamilton Q34, F27 in Vollstedt-Drake.

August 15 ... Pocono 500 ... Rick Mears Q1, wins. Jim McElreath Q26, F18 in Eagle-Drake.

Al Loquasto Q28, F26 in Eagle/Drake.

Drakes did not appear in other races. May have entered, may have tried to qualify, no records ...

**1983**

May 29, 1983 ... Indianapolis 500 ... Tom Sneva Q4 at 203.687, wins in March-Cosworth. ND. Two Rolla Vollstedt cars with Drake engines driven by Mark Alderson and Larry Cannon DNQ.

**1984**

May 27, 1984 ... Indianapolis 500 ... Rick Mears Q3 at 207.847, wins in March-Cosworth. ND. No Drakes tried to qualify.

Total wins	1966-1978	<b>91 Drake</b>	<b>94 Ford</b>
Indy wins	1966-1978	<b>6 Drake</b>	<b>6 Ford</b>

### Drake engine winners at the Indianapolis Motor Speedway ...

1968	1972	1973	1974	1975	1976
Eagle	McLaren	Eagle	McLaren	Eagle	McLaren
Rislone/ Leader Cards	Sunoco/McLaren/ Penske	STP/Patrick	McLaren	Jorgenson/ AAR	HyGain/ McLaren
#3	#66	#20	#3	#48	#2
Drake 168TC	Drake 159TC	Drake 157TC	Drake 159TC	Drake 159TC	Drake159 19 degree
Bobby Unser	Mark Donohue	Gordon Johncock	Johnny Rutherford	Bobby Unser	J Rutherford
(1) <a href="#">3@169.507</a>	<a href="#">3@191.408</a>	<a href="#">11@192.555</a>	<a href="#">25@190.446</a>	<a href="#">3@191.073</a>	<a href="#">1@188.957</a>
(2) 8-56, 90-112, 120-165, 192-200	188-200	40-42, 73-133 rain	65-125, 136-137, 141-175, 177-200	124, 165-174 rain	1-3, 39-60, 80-102 rain
(3) 25	6	14	13	7	13
(4) 5	1	3	4	1	3
(5) 3	1	5	2	1	2
(6) 4,330	1,720	2,240	3,650	2,480	4,220
(7) first	fifth	seventh	second	third	second

(1) Indy Qualifying starting place and speed

(2) Indy Laps lead

(3) Championship Races entered

(4) Total Wins

(5) Total Poles

(6) Championship points

(7) Championship standing

1968 ... Bobby Unser, Rislone/Leader Card #3 168 cid Drake-Eagle won Indy and 4 others, and 3 poles. Drake engines won 14 others. Eagle wins 4 with Drake.

1969 ... Bobby drove a Bardahl Lola-Offy into 3<sup>rd</sup> at Indy ... won at Langhorne in the Eagle.

1972 ... Mark Donohue, Sunoco McLaren/Penske, #66 159 cid Drake-McLaren won Indy. 9 other major races were won by Drake ... 4 in Eagles ... 3 in McLarens.

1973 ... Donohue in 3 races in Drake-Eagle ... no wins

1973 ... Gordon Johncock, STP Double Oil Filter/Patrick, #20 157 cid Drake-Eagle won Indy. Bobby was in second in a McLaren-Drake. 13 other major races were won by Drake ... 4 in Eagles, 2 in McLarens.

1974 ... Johncock wins 2 in Eagle-Drake. Drakes win 12, 7 in Eagles, 4 in McLarens.

1974 ... Johnny Rutherford, McLaren, #3 159 cid Drake-McLaren won Indy. 11 other major races were won by Drake.

1975 ... JR won 1 in Drake-McLaren. Was 2<sup>nd</sup> at Indy. Drakes won six, 3 in Eagles, 2 in McLarens

1975 ... Bobby Unser, Jorgensen All American Racers, #48 159 cid Drake-Eagle won Indy. 5 other major races were won by Drake, 3 in Eagles, 2 in McLarens..

1976 ... Bobby won 2 in Cobre Eagle-Drake (same car?). Bobby won his 3<sup>rd</sup> Indy in 1981 in a Cosworth-Penske.

1976 ... Johnny Rutherford, Hy-Gain McLaren, #2 159 cid Drake-Eagle won Indy. 6 other races major were won by Drakes.

1977 ... Johnny won 4 in a McLaren-Cosworth. Tom Sneva and Mario also had Cosworths in their McLarens. The Drake DGS won 3. JR won Indy for the 3<sup>rd</sup> time in 1980 in a Chaparral-Cosworth.

Mission Viejo, California

16 January 2006